

**3.7.1 - REPORT OF THE ACTIVITIES OF MoUs /
LINKAGE**

Summary on the MoU signed between Department of Biotechnology, Alagappa University, Karaikudi & Tablets (India) Ltd., Chennai

Objective of the MoU

The Tablets (India) Ltd., (TIL) Chennai, has evinced interest to avail the research and developmental experience of Prof. A.Veera Ravi, Department of Biotechnology, Alagappa University, Karaikudi to be involved in the development of a new product for aquaculture to control Early Mortality Syndromes (EMS) in the culture of *Litopenaeus vannamei* as an industry consultancy project and accordingly TIL has agreed to financially support and reimburse the cost involved in the project and has further agreed to enter into this MOU with Alagappa University for initiating the discussion and to have a preliminary understanding through this MOU for Alagappa University to commence and undertake the R&D activities in the project with the objective of development of new aqua culture product exclusively for TIL.

Both the organisations were agreed to encourage the following activities case by case such as:

- Isolation and Identification of EMS specific *Vibrio parahaemolyticus* through conventional and molecular approach.
- Evaluation of anti-QS compounds obtained from natural resources against QS dependent virulence factors production and biofilm formation in *V. Parahaemolyticus*.
- In vivo and in field evaluation of anti-pathogenic efficiency of selected anti-QS compounds against EMS infected *Penaeus monodon/ Artemia nauplii* host model.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- The Tablets (India). Ltd., has agreed to sponsor a sum of Rs. 22,26,000/- (Twenty-two Lakhs and twenty-six thousand only) for this consultancy project and released the entire amount in a phased instalment.
- The department of Biotechnology, Alagappa University had executed the research in a successful manner and invented novel phytochemical formulations as an alternate to antibiotics.
- These novel phytochemical formulations were granted with two Indian patents such as 345407 and 457480.
- These novel phytochemical formulations were converted in to the commercial products by this Tablet (India) Ltd. company and it is being used in the aquaculture industry to prevent EMS diseases in shrimp cultivations.

Duration of the MoU: 01.07. 2015-25.07.2018 (3 years)

Photographs of the MoU, Patents and Products

Summary on the MoU signed between Department of Bioinformatics, Alagappa University & Sri Ramachandra University, Chennai

Objective of the MoU

The collaboration aims to exchange technical skills and promote knowledge transfer between the groups. In-silico, in-vitro, and in-vivo studies work synergistically to achieve project goals. Our primary focus includes identifying and validating inhibitors against specific targets such as PAK1 and LIV1, implicated in cancer. The learning process is substantial, and the findings are novel, published in esteemed high-impact journals.

- Joint Research and Development projects in the areas of Biotechnology, Bioinformatics, Structural Biology, and other fields related to basic medical and allied sciences.
- Graduate, Postgraduate, and Doctoral Research Project work/Internship/Summer Project to be conducted at both ALU and SRU.
- Organizing and participating in Joint Symposia, Conferences, Workshops, and Short-term Refresher courses conducted by both organizations.
- Undertaking joint projects in pre-clinical toxicology and pharmacokinetics, extending clinical trial facilities for joint studies, and carrying out joint trials related to bio-products developed by ALU at SRU.
- Extending access to the library and knowledge-sharing facilities mutually for the benefit of students and faculty in SRU and ALU.

Activities of the MoU Undertaken

The following activities were undertaken after signing of the MoU agreement:

- Dr. Ganesh Venkatraman, SRMC as an invited speaker by providing all the expenditure to International Conference on Recent Trends in Structural Bioinformatics and Computer Aided Drug Design (ICSBCADD-2022 from Nov 21st to 25th).
- Good number of publications was produced through collaborative research carried out under the MoU.

Duration of the MoU: 2016-2021 (5 years)

Photographs of the MoU



Prof. Ganesh Venkatraman was invited to Alagappa University to deliver a talk as part of the UGC-Innovative Programme in the year 2016.

Outcomes of the MoU

In the given context, significant outcomes were achieved and shared through publication in esteemed journals. As an integral component of the MoU, the following scholarly works were produced.

1. Biswal J, Jayaprakash P, Rayala SK, Venkatraman G, Rangasamy R, Poopandi S, Jeyakanthan J. Water Mapping and Scoring Approaches to Predict the Role of Hydration Sites in the Binding Affinity of PAK1 Inhibitors. *Comb Chem High Throughput Screen*. 2022;25(4):660-676. doi: 10.2174/1386207324666210308110646.
2. Biswal J, Jayaprakash P, Rayala SK, Venkatraman G, Rangaswamy R, Jeyaraman J. WaterMap and Molecular Dynamic Simulation-Guided Discovery of Potential PAK1 Inhibitors Using Repurposing Approaches. *ACS Omega*. 2021 Oct 5;6(41):26829-26845. doi: 10.1021/acsomega.1c02032.
3. Kanumuri R, Chelluboyina AK, Biswal J, Vignesh R, Pandian J, Venu A, Vaishnavi B, Leena DJ, Jeyaraman J, Ganesan K, Aradhyam GK, Venkatraman G, Rayala SK. Small peptide inhibitor from the sequence of RUNX3 disrupts PAK1-RUNX3 interaction and abrogates its phosphorylation-dependent oncogenic function. *Oncogene*. 2021 Aug;40(34):5327-5341. doi: 10.1038/s41388-021-01927-x.
4. Biswal J, Jayaprakash P, Suresh Kumar R, Venkatraman G, Poopandi S, Rangasamy R, Jeyaraman J. Identification of Pak1 inhibitors using water thermodynamic analysis. *J Biomol Struct Dyn*. 2020 Jan;38(1):13-31. doi: 10.1080/07391102.2019.1567393.
5. Gowri M, Sofi Beaula W, Biswal J, Dhamodharan P, Saiharish R, Rohan prasad S, Pitani R, Kandaswamy D, Raghunathan R, Jeyakanthan J, Rayala SK, Venkatraman G. β -lactam substituted polycyclic fused pyrrolidine/pyrrolizidine derivatives eradicate *C. albicans* in an ex vivo human dentinal tubule model by inhibiting sterol 14- α demethylase and cAMP pathway. *Biochim Biophys Acta*. 2016 Apr;1860(4):636-47. doi: 10.1016/j.bbagen.2015.12.020.
6. Ravi M, Tentu S, Baskar G, Rohan Prasad S, Raghavan S, Jayaprakash P, Jeyakanthan J, Rayala SK, Venkatraman G. Molecular mechanism of anti-cancer activity of phycocyanin in triple-negative breast cancer cells. *BMC Cancer*. 2015 Oct 23; 15:768. doi: 10.1186/s12885-015-1784-x.

**Summary on the MoU signed between Department of Bioelectronics and Biosensor,
Alagappa University, India & Department of Nanoscience and Technology,
Tamil Nadu Agricultural University, Coimbatore, India**

Objective of the MoU

The main aim of this MoU agreement is to complement the scientific program of “Chemo-Bio-Sensors” at both facilities, design knowledge, technical and scientific consultations, research activities and personal training. TNAU and ALU desire to further advance scientific knowledge and discoveries through the conduct of collaborative research activities for the purpose of mutual benefits.

- Exchange of materials in education and research, publications and academic information.
- Exchange of faculty and research scholars.
- Exchange of students to pursue degree /PG Dip/Ph.D. programmes.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Based on this MoU, a project was sanctioned under DST in the title of “Development of Foliar Diagnostic Kit for On=Site Detection of Nitrogen and Moisture Status in Crops” with amount Rs. 10,65,083.

Duration of the MoU: 03-03-2017 to 03-03-2020

Outcome of the MoU

- Prof. C. Sekar has been nominated as Adjunct Faculty in Dept. of Nanoscience and Technology, NRM, TNAU, Coimbatore.
- A novel electrochemical sensor based on Fe-doped $MgNi_2O_3$ nanoparticles for simultaneous determination of dopamine, uric acid, nicotine and caffeine over very wide linear ranges. S. S. S. Swara Reddy, C. Arul, Liu Zhaoqi, N. Lavanya, C. Sekar. Journal of Electroanalytical Chemistry 878 (2020) 114648.

Summary on the MoU signed between Department of Women's Studies, Alagappa University, India & Ford Trust, Tiruppattur, Tamil Nadu

Objective of the MoU

This Memorandum of Understanding's primary goal is to foster friendship and voluntary collaboration between the two organisations in order to benefit both of them. The importance of cooperative learning opportunities that combine theory and practice and support campus internationalisation is acknowledged by both organisations. The departments agree to support the following initiatives, including

- Exchange of materials in education and research, publications and academic information.
- Implementation of field based activities
- Internship programme for students.

Activities of the MoU Undertaken

The following activity was undertaken after the MoU agreement signed:

- Awareness Programme on Social Empowerment of Women through Eradication of Dowry System" on 4th December 2018.

Duration of the MoU: 2018-2021 (3 years)

Photograph of the Awareness Programme



Outcomes of the MoU

- The awareness programme was organized in order to solve social issues.
- Students involved in field-based activities
- Created a gender sensitization programme for students, facilities, and the public.

E. Arumugam

Sr. Professor & Head
Department of Women's Studies
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Summary on the MoU signed between Department of Microbiology, Alagappa University, India; The CSIR, Port Elizabeth, Republic of South Africa

Objective of the MoU

The main aim of this MoU agreement is to encourage voluntary interaction and cooperation and to promote friendship between the two departments for their mutual benefit. Both departments recognize the value of cooperative educational experiences that integrate theory and practice and promote campus internationalization.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Dr. M. Sudhakar delivered an invited lecture on International Conference on Recent Trends in Microbiology- 2016.
- Dr. M. Sudhakar was actively presented a lecture through Google meet on international symposium on Bioplastics -2023.

Duration of the MoU: 2017-2022 (5 years)

Photographs of the MoU:



Outcomes of the MoU

In this context, several fruitful results were obtained and several the results were published in highly reputed journals. Based on this, the following publications were made as a part of the MoU.

1. Mohanrasu, K., Guru, R.R., Dinesh, G.H., Zhang, K., Sudhakar, M., Pugazhendhi, A., Jeyakanthan, J., Kumar, P., Govarthanan, M., Arun, A., 2021. Production and Characterization of biodegradable Polyhydroxybutyrate by *Micrococcus luteus* isolated from marine environment. International Journal of Biological Macromolecules. DOI: <https://doi.org/10.1016/j.ijbiomac.2021.07.029> (IF – 8.025).

2. T. Angelin Swetha, K. Mohanrasu, Muniyasamy Sudhakar, Rathinam Raja, Kumar Ponnuchamy, Govarthanan Muthusamy, A. Arun.2022. A comprehensive review on techniques used in conversion of biomass into bioeconomy. *Sustainable Energy Technologies and Assessments*. Volume 53, Part C, 102682, ISSN 2213-1388, <https://doi.org/10.1016/j.seta.2022.102682> ,12.11.22. (IF- 7.632).
3. Mohanrasu, K., Guru Raj R.R., Dinesh, G.H., Zhang, K., Siva Prakash, G., Song, D., Muniyasamy, S., Pugazhendhi, A., Jeyakanthan, J., Arun, A., 2020. Optimization of media components and culture conditions for polyhydroxyalkanoates production by *Bacillus megaterium*. Volume 271, 117522. *Fuel*. <https://doi.org/10.1016/j.fuel.2020.117522> (IF – 8.035).
4. Muniyasamy, S., Ofosu, O., Thulasinathan, B., Thondi Rajan, A.S., Ramu, S.M., Soorangkattan, S., Muthuramalingam, J.B., Arun, A., 2019, Thermal-chemical and biodegradation behaviour of alginic acid treated flax fibres/ poly(hydroxybutyrate-co-valerate) PHBV green composites in compost medium, *Biocatalysis and Agricultural Biotechnology*, doi: <https://doi.org/10.1016/j.bcab.2019.101394> (IF: 4.26).

Summary on the MoU signed between Department of Library and Information Science, Alagappa University and Society for the Advancement of Library and Information Science, Chennai

Objective of the MoU

The main aim of this MoU agreement is to encourage voluntary interaction and cooperation and to promote academic relationship between DLIS, Alagappa University and SALIS Chennai for their mutual benefit. Both the organisations agree to encourage the following activities case by case such as

- Promote application and adoption of Information Technology in Library and Information Centres.
- Conduct State-level, National-level and International-level conferences in the field of Library and Information Science Education.
- Encourage and recognise professionals who have done yeomen services to the profession by giving awards etc.

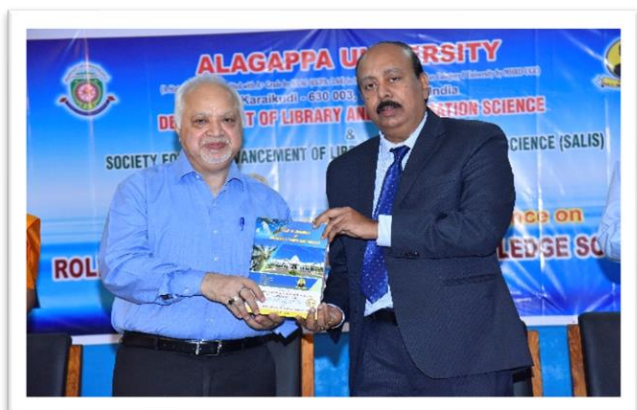
Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- A Two-day National Conference on the “Role of Libraries in Creating a Knowledge Society” was jointly organised by the Department of Library and Information Science, Alagappa University, Karaikudi and Society for the Advancement of Library and Information Science (SALIS), Chennai, on 7th and 8th of September 2018.
- A Two-day “International Conference on Enhancement of Technology and Innovations in Contemporary Libraries” was jointly organised by the Department of Library and Information Science, Alagappa University, Karaikudi and Society for the Advancement of Library and Information Science (SALIS), Chennai, on 24th& 25th April 2019.

Duration of the MoU: 2017-2019 (2 years)

Photographs of the MoU



Outcomes of the MoU

They provided hands-on training for library automation software, digital library software, and designing and developing online courses through Moodle for students and research scholars.

Summary on the MoU signed between Department of Fine Arts, Alagappa University, India & Pertubuhan Tamil Kapagam Malaysia

Objective of the MoU

- Exchange of Students and faculty members for research discussion, deliberation and carry out the research works.
- Exchange of Academic publications, information and research resources.
- Collaborative activities in recognition of needs.
- Arrange for short-term training programmes for teachers and students to each other's.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Both parties shall discuss the problems involved to mutual satisfaction and enter into specific activity – agreements, based on the forms of implementation mutually agreed upon.

Duration of the MoU: 2017-2022 (5 Years)

Photographs of the MoU



Outcomes of the MoU

The MoU produced several beneficial outcomes, with select results being showcased in esteemed academic journals. As a result, a range of events were arranged as specified within the agreement.

1. Centre for Tamil Culture Alagappa University, Karaikudi, in collaboration with Sultan Idris Education University, Pendidikan Kuala Lumpur, Malaysia and Semmoodhal Publications. Chennai, conducted on 28.03.2018 an International Conference on “Trends in Research”.
2. A group of 37 Malaysian students, led by Dr. R. Rajendran, visited Karaikudi Alagappa University to explore Tamil culture. After this, the Malaysian team visited the Tamil Culture Museum and the Vallal Alagappa Museum. Director of Centre for Tamil Culture. Dr. S. Senthamizh Pavaai gave a speech to the students about Tamil culture.

Summary on the MoU signed between Department of Special Education and Rehabilitation Science, Alagappa University, India & National Institute for Empowerment of Persons with Multiple Disabilities (Divyangjan) (NIEPMD) (D)

Objective of the MoU

The main aim of this MoU agreement is to encourage voluntary interaction and cooperation and to promote co-partnership between the two Institutes for their mutual benefit. Both Institutes recognize the value of cooperative educational experiences that integrate theory and practice and promote on campus Intensive Training Programme (Continuing Rehabilitation Education Programme). Both the Institutes agree to encourage the following activities case by case such as:

To provide Rehabilitation Services to PwDs

- Faculty Development Programme
- Institutional Visit and internship
- RCI Continuous Rehabilitation Education Programmes
- Faculty participation and exchange programmes
- HRD programmes as guest lectures
- Awareness / Sensitization generation programmes
- Pursuing PhD in Special Education programme in Alagappa University
- Research and Development
- Curriculum drafting, Question Paper setting and Evaluation
- External Expert for Practical/Intensive Teaching Practice
- Board of Studies (Member)
- Vocational Training

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

1. In collaboration with NIEPMD Department of Special Education and Rehabilitation Science organised RCI – CRE Programmes and both Institution faculties were invited as Resource Persons for RCI CRE Programme.
2. Our Department M.Sc Psychology Students gone to NIEPMD for their Internship Institutional visit was arranged by both Institution.
3. One Scholar got PhD Degree in Special Education and Two Scholars are Pursuing their Ph.D in Special Education programme.
4. More than eight Article publications were done by both Institution faculties.

Duration of the MoU: Signed on 13.3.2017 and renewed on 10.05.2023 (6 years)

Photographs of the Activities



Outcomes of the MoU

- On a regular basis, the DESRS, Alagappa University sends clients with disabilities for an overall assessment to NIEPMD and in turn carries out intervention programme at the Model School of the DSERS.
- Students undergoing special education graduation and post-graduation programme at DSERS regularly visit NIEPMD for orientation about the various types of services offered at NIEPMD. The students of psychology are placed in the Dept. Of Clinical Psychology for a month to learn about various psychological assessments and interventions to PwDs.
- NIEPMD in collaboration with the DSERS conducted 03 (THREE) number of CRE programmes through offline mode with participation of 100 delegates each and 02 number of CRE programme conducted through online mode with a participation of 200 delegates.
- The faculty of NIEPMD and DSERS both have been participating in various short term training programmes like workshops, seminars and conferences in NIEPMD and as well in DSERS, Alagappa University.
- The faculties from Dept. of Special Education, Social Work and Clinical Psychology have been undertaking guest lecturers for the graduate, post graduate and psychology students of DSERS.
- NIEPMD in collaboration with DSERS have been conducting various awareness generation programmes for the students, faculties of Alagappa University. NIEPMD Faculty acted as External Examiner for Question Paper setting and for Practical Examination.
- One faculty from NIEPMD has completed PhD in Special Education under the guidance of the Head of the Dept. DSERS and two faculties have registered for the PhD.
- NIEPMD faculties along with the HoD, DSERS have been conducting research and publishing in various reputed journals.
- HoD, DSERS was being involved in drafting curriculum for the M. Ed Special Education (MD) and (A.S.D) which are presently being offered at NIEPMD.
- More than eight Articles were published by both Institution faculties.
- The HoD, Adult Independent Living and Clinical Psychology are members in the Board of studies of DSERS.

Summary on the MoU signed between Alagappa University, India & Indian Institute of Technology Madras, Chennai, India

Objective of the MoU

The main aim of this MoU agreement is to encourage voluntary interaction and cooperation and to promote friendship between the two departments for their mutual benefit. Both departments exchange of academic information, scholarly information, materials and publications. Both the departments agree to encourage the following activities case by case such as:

- Exchange of materials for education and research, including publications and academic information.
- Exchange of faculty members and research scholars.
- Exchange of students for pursuing degree/PG Dip/Ph.D. programs.
- Facilitate mutual language learning exchange.

Activities of the MoU Undertaken

The following activities were undertaken after the signing of the MoU agreement:

- Dr. Suresh Kumar Rayala from IITM to serve as a speaker for the GATE – JAM Opportunities Programme's Examination Awareness Session.
- Our institutions actively organize academic conferences, workshops, and seminars, creating a platform for scholars from both universities to present their research findings and engage in meaningful idea exchange.
- Dr. Suresh Kumar Rayala and Dr. Michael Gromiha from IITM as distinguished speakers for the International Conference cum Workshop on "Recent Trends in Structural Bioinformatics and Computer-Aided Drug Design" [ICSBCADD'2022], with all associated expenditures covered by our institutions.
- Good number of publications was produced through collaborative research carried out under the MoU.

Duration of the MoU: 2017-2020 (3years)

Photographs of the MoU



Prof. Suresh Kumar Rayala delivered a talk on the GATE-JAM Programme, and Prof. Michael Gromiha presented a talk at the 2nd International Conference cum Workshop on "Recent Trends in Structural Bioinformatics and Computer-Aided Drug Design." [ICSBCADD'2022 – 21st to 25th Nov]

Outcomes of the MoU

In this context, numerous valuable results were obtained and published in highly reputed journals. Consequently, the following publications were made as a part of the MoU.

1. Ravi, M., Tentu, S., Baskar, G., Rohan Prasad, S., Raghavan, S., Jayaprakash, P., Jeyakanthan, J., Rayala, S. K., & Venkatraman, G. (2015). Molecular mechanism of anti-cancer activity of phycocyanin in triple-negative breast cancer cells. *BMC cancer*, 15, 768. <https://doi.org/10.1186/s12885-015-1784-x>
2. Jagadeeshan S, Subramanian A, Tentu S, Beesetti S, Singhal M, Raghavan S, Surabhi RP, Mavuluri J, Bhoopalan H, Biswal J, Pitani RS, Chidambaram S, Sundaram S, Malathi R, Jeyaraman J, Nair AS, Venkatraman G, Rayala SK (2016). P21-activated kinase 1 (Pak1) signaling influences therapeutic outcome in pancreatic cancer. *Ann Oncol*. DOI: 10.1093/annonc/mdw184
3. Gowri, M., Sofi Beaula, W., Biswal, J., Dhamodharan, P., Saiharish, R., Rohan prasad, S., Pitani, R., Kandaswamy, D., Raghunathan, R., Jeyakanthan, J., Rayala, S. K., & Venkatraman, G. (2016). β -lactam substituted polycyclic fused pyrrolidine/pyrrolizidine derivatives eradicate *C. albicans* in an ex vivo human dentinal tubule model by inhibiting sterol 14- α demethylase and cAMP pathway. *Biochimica et biophysica acta*, 1860(4), 636–647. <https://doi.org/10.1016/j.bbagen.2015.12.020>
4. Biswal, J., Jayaprakash, P., Suresh Kumar, R., Venkatraman, G., Poopandi, S., Rangasamy, R., & Jeyaraman, J. (2020). Identification of Pak1 inhibitors using water thermodynamic analysis. *J Biomol Struct Dyn*. 2020; 38(1):13-31. doi:10.1080/07391102.2019.1567393
5. Kanumuri, R., Chelluboyina, A. K., Biswal, J., Vignesh, R., Pandian, J., Venu, A., Vaishnavi, B., Leena, D. J., Jeyaraman, J., Ganesan, K., Aradhyam, G. K., Venkatraman, G., & Rayala, S. K. (2021). Small peptide inhibitor from the sequence of RUNX3 disrupts PAK1-RUNX3 interaction and abrogates its phosphorylation-dependent oncogenic function. *Oncogene*. 2021; 40(34):5327-5341. doi:10.1038/s41388-021-01927-x
6. Biswal, J., Jayaprakash, P., Rayala, S. K., Venkatraman, G., Rangaswamy, R., & Jeyaraman, J. (2021). WaterMap and Molecular Dynamic Simulation-Guided Discovery of Potential PAK1 Inhibitors Using Repurposing Approaches. *ACS Omega*. 6(41):26829-26845. doi:10.1021/acsomega.1c02032
7. Biswal, J., Jayaprakash, P., Rayala, S. K., Venkatraman, G., Rangasamy, R., Poopandi, S., & Jeyakanthan, J. (2022). Water Mapping and Scoring Approaches to Predict the Role of Hydration Sites in the Binding Affinity of PAK1 Inhibitors. *Combinatorial Chemistry & High Throughput Screening*, 25(4), 660-676. DOI: 10.2174/1386207324666210308110646

Summary on the MoU signed between Department of Fine Arts, Alagappa University, India & Singapore Tamil Teachers' Union, Singapore

Objective of the MoU

Exchange of Students and faculty members for research discussion, deliberation and carry out the research works.

- Exchange of Academic publications, information and research resources.
- Collaborative activities in recognition of needs.
- Arrange for short-term training programmes for teachers and students to each other's.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Both parties shall discuss the problems involved to mutual satisfaction and enter into specific activity – agreements, based on the forms of implementation mutually agreed upon.

Duration of the MoU: 2017-2022 (5 Years)

Renewal of the MoU: 2022 – 2027 (5 Years)

Photographs of the MoU



Outcomes of the MoU

The memorandum of understanding yielded numerous favorable outcomes, with certain findings being disseminated through respected academic publications. Consequently, a series of events were organized in accordance with the terms outlined in the MoU.

1. Centre for Tamil Culture arranged a special Lecture Programme on 23.10.2018 in which Prof. Dr. S. Senthamizh Pavai gave a Special Lecture on 23.10.2018 in which “Tamil Culture” Prof. N. Rejendran Vice Chancellor, Alagappa University preside over the function.

2. The Centre for Tamil Culture and Singapore Tamil Teachers Association jointly organized a International Conference on 26.05.2019 in the theme of Modern Research Trends in curriculam Teaching.

3. Centre for Tamil Culture, Karaikudi Alagappa University Tamil Culture Center and Singapore Tamil Writers Association jointly organized the children's poet Ala. Valliappa Centenary E-seminar was held on Friday 25.11.2022.

Summary on the MoU signed between Department of Physics, Alagappa University, India & Department of Chemical Engineering, Chung Yuan Christian University, Taiwan, ROC

Objective of the MoU

The main aim of this MoU agreement is to encourage voluntary interaction and cooperation and to promote friendship between the two departments for their mutual benefit. Both departments recognize the value of cooperative educational experiences that integrate theory and practice and promote campus internationalization. Both the departments agree to encourage the following activities case by case such as

- Exchange of materials in education and research, publications and academic information.
- Exchange of faculty and research scholars.
- Exchange of students to pursue degree /PG Dip/Ph.D. programmes.
- Impart the mutual exchange of language learning.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Dr.R. Muruganatham invited as for a post-doctoral position, at that time 2017.
- Dr. Wei-Ren Liu, CYCU started offering a TEEP fellowship to a PhD scholar Ms. K. Sutharthani, who is pursuing PhD under the guidance of Dr.R. Subadevi, Asst. Professor, Department of Physics.
- Dr. WRL, invited the Indian operator Dr. M. Sivakumar, Professor of Physics, as an invited speaker by providing all the expenditures to International Symposium on Carbon Materials 2023 (ISCM-2023) held in Tainan, Taiwan.

Duration of the MoU: 2017-2032 (15 years)

Photographs of the MoU



Outcomes of the MoU

In this context, several fruitful results were obtained and several the results were published in highly reputed journals. Based on this, the following publications were made as a part of the MoU.

1. S.S.Pradeepa, K.Sutharathani, R.Subadevi*, Wei-Ren Liu, M.Sivakumar*, Investigation on two-dimensional molybdenum oxide-graphitic carbon nitride (MoO₃-g-C₃N₄) heterostructures based hybrid electrodes for the fabrication of high energy density solid state supercapacitors, *Journal of Taiwan Institute of Chemical Engineers* (Published online) <https://doi.org/10.1016/j.jtice.2023.105084> IF:5.7
2. **Shu-HanZhuanga Chun-ChuenYangb MingtaoZhengcd SubadeviRengapillaie Sivakumar Marimuthue Yu-Shen Chiangf Bor KaeChangf Chia-HungHuanggh Wei-RenLiua**, A combined first principles and experimental study on Al-doped Na₃V₂(PO₄)₂F₃ cathode for rechargeable Na batteries, *Surface and Coatings Technology* 434 (2022) 128184- **IF: 4.865** <https://doi.org/10.1016/j.surfcoat.2022.128184>.

Summary on the MoU signed between Department of Biotechnology, Alagappa University, India & Evolva Biotech Pvt. Ltd., Taramani, Chennai

Objective of the MoU

The main aim of this MoU agreement is to explore the potential of resveratrol and vanillin as a source of anti-Quorum Sensing (anti-QS) /anti-infective compounds against aquatic microbial diseases. The outcome of proposed research work is expected to provide resveratrol and vanillin with an enhanced anti-pathogenic and anti-infective activity, which can be used as an alternate to antibiotics to prevent microbial diseases especially infections caused by bacterial and fungal pathogens in aquaculture. Both the organisations agree to encourage the following activities case by case such as

- Exploring the *in vitro* anti-QS and antibiofilm potentials of resveratrol against aquatic bacterial pathogens
- Exploring the *in vivo* anti-infective potential of resveratrol against aquatic bacterial pathogens
- Efficiency evaluation of the nano encapsulated resveratrol for their improved activity, bioavailability, sustained release and site targeted delivery.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- The Evolva Biotech Pvt. Ltd., has agreed to sponsor a sum of Rs. 30,00,000/- (Thirty Lakhs only) for this consultancy project and released first instalment on 18.09.2017.
- Ms. R. Durgadevi was appointed as Project Fellow on 20th September 2017 in this industry sponsored consultancy project.
- The Evolva Biotech Pvt. Ltd., has released the second instalment on 06.03.2018.

Duration of the MoU: 06.07. 2017-05.07.2020 (3 years)

Photographs of the MoU



Outcomes of the MoU

In this context, several fruitful results were obtained and several the results were published in highly reputed journal. Based on this, the following publication was made as a part of the MoU.

3. Durgadevi, R., Abirami, G., Alexpandi, R., Nandhini, K., Kumar, P., Prakash, S., & Veera Ravi, A. (2019). Explication of the potential of 2-hydroxy-4-methoxybenzaldehyde in hampering uropathogenic proteus mirabilis crystalline biofilm and virulence. *Frontiers in Microbiology*, 10, 2804 <https://doi.org/10.3389/fmicb.2019.02804>.

Summary on the MoU signed between Department of Fine Arts, Alagappa University, India & Tamil Arts and Culture Association Incorporated, Australia

Objective of the MoU

- Exchange of Students and faculty members for research discussion, deliberation and carry out the research works.
- Exchange of Academic publications, information and research resources.
- Collaborative activities in recognition of needs.
- Arrange for short-term training programmes for teachers and students to each other's.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Both parties shall discuss the problems involved to mutual satisfaction and enter into specific activity – agreements, based on the forms of implementation mutually agreed upon.

Duration of the MoU: 2017-2022 (5 Years)

Photographs of the MoU



Outcomes of the MoU

The outcomes of the memorandum of understanding were notably successful, with certain findings being disseminated through esteemed academic publications. This led to the organization of various events as outlined in the agreement.

1. A One-Day online workshop on “Tamil Culture and Tamilar in Abroad” was jointly organized by the Centre for Ramil Culture Alagappa University, Karaikudi and Tamil Arts and Culture, Sydney, Australia on 01.12.2020 through online mode.

Summary on the MoU signed between Department of Bioinformatics, Alagappa University & Department of Biotechnology and Bioinformatics, Bishop Heber College

Objective of the MoU

The primary objective of this MoU agreement is to foster mutual benefit through a formal linkage, aiming to develop new collaborative teaching and research programs in the cutting-edge fields of Biotechnology and Bioinformatics. In consideration of the premises and the mutual covenants hereinafter contained, the parties agree to promote research that yields significant outcomes, including patents and publications in highly indexed Scopus journals.

- Offering Joint Research and Development projects in the fields of Biotechnology, Bioinformatics, Structural Biology, and other areas related to basic medical and allied sciences.
- Conducting Graduate, Postgraduate, and Doctoral Research Project work, internships, and summer projects at both ALU and BHC.
- Organizing and participating in Joint Symposia, Conferences, Workshops, and Short-term Refresher courses collaboratively conducted by both organizations.
- Facilitating the exchange of faculty for guest lectures and planning short-term and long-term programs on current research areas.
- Providing access to library and knowledge-sharing facilities for students and faculty members from both institutions.

Activities of the MoU Undertaken:

The following activities were initiated after the signing of the MoU agreement:

- Prof. J. Jeyakanthan, Head of the Department, was invited to give a talk at the Biological Innovations and Computational Exploration for Pandemic Challenges (BIPAC 2022) held between 24th and 25th February 2022.
- Good number of publications was produced through collaborative research carried out under the MoU.

Duration of the MoU: 2018-2023 (5years)

Photographs of the MoU



The faculty members visited Alagappa University, and Master's students from Bishop Heber College were exchanged to carry out their M.Sc. dissertations at Alagappa University.

Outcomes of the MoU

In this context, several valuable outcomes were obtained and published in reputable journals. As part of the MoU, the following publications were made:

1. Edward, J., Sudarsha, K., **Jeyakanthan, J.**, Sherlin Rosita, A., & Gideon, D. A. (2022). Efficacy of Synthetic Organic Molecule Inhibitors of TRAF2 and NCK-Interacting Kinase (TNIK) Against Colorectal Cancer. In Handbook of Oxidative Stress in Cancer: Therapeutic Aspects (pp. 1-27). Singapore: Springer Nature Singapore.
2. M, R. K., Gideon, D. A., Mariadasse, R., Nirusimhan, V., A, S. R., Edward, J. C., **Jeyaraman, J.**, & Dhayabaran, V., 5th (2022). *Insilico* evaluation of isatin-based derivatives with RNA-dependent RNA polymerase of the novel coronavirus SARS-CoV-2. *Journal of biomolecular structure & dynamics*, 40(15), 6710–6724. <https://doi.org/10.1080/07391102.2021.1890223>
3. Nirusimhan V, Andrew Gideon D, Parashar A, Jeyachandran S, Jeyaraman J, Subbaraj G, Kulanthaivel L. Structural Modeling of *Drosophila melanogaster* Gut Cytochrome P450s and Docking Comparison of Fruit Fly Gut and Human Cytochrome P450s. *Curr Drug Metab.* 2022;23(4):299-316. doi: 10.2174/1389200223666220511162234

Summary on the MoU signed between Department of Economics and Rural Development, Alagappa University, India and the Faculty of Agriculture and Life Science, Hirosaki University, Japan

Objective of the MoU

The main aim of this MoU agreement is to promote friendship between India and Japan and cooperation regarding education and scientific research in the following areas:

- Exchange of scientific information;
- Cooperation regarding research, symposia and related activities;
- Exchange of faculty and administrative staff;
- Exchange of undergraduate and graduate students;
- Mutual contribution to the development of additional educational and research programmes.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Dr. Takahiro Sato, Associate Professor of Hirosaki University, Japan and Dr. Kazuo Watanbe, Associate Professor of Kyoto University, Japan and Ms. Natsuki Sumiya (student of Dr. Takahiro Sato) visited the Department of Economics and Rural Development and interacted with the faculty members and students as well as explored the possibilities for the collaborative research, on August 16, 2019.

Duration of the MoU: 2018-2023 (5 years)

Photographs of the MoU



Outcomes of the MoU

Ms. Sumiya Natsuki, student of Dr. Takahiro Sato, Associate Professor in Faculty Agriculture and Life Science, Hirosaki University, Japan visited Department of Economics and Rural Development, Alagappa University, Karaikudi from August 15 to September 13, 2019 and took help from the Staff and Ph.D. scholars to conduct field survey for a study on “Factors Affecting Subjective Well-Being of Indian Rural Women: Case of Sivagangai District, Tamil Nadu”.

Summary on the MoU/Linkage Signed between Department of Banking Management, Alagappa University, and Indian Bank

Objective of the MoU/Linkage

The Department of Banking Management is the pioneer in offering a postgraduate program in banking management throughout the country. It offers an MBA (Banking and Insurance) program to train students who aspire to a banking career. The prime objective of the program is to impart theoretical knowledge and provide practical exposure to the students on various aspects of banking, grooming them as dynamic and tech-savvy bankers. As a part of the program, every student has to undergo practical training (a summer internship) in a bank branch for a period of 45 days. All the students are deputed to various branches of Indian Bank with the approval of the corporate office and zonal office of the bank.

Activities of the MoU/Linkage Undertaken

1. Students got 45 days of intensive training in various practical aspects of banking.
2. Students gained hands-on experience handling customers.
3. The training report was prepared by the students, and it was evaluated by a panel of experts consisting of faculty members and the banker.

Duration of the MoU/Linkage: April,2018(45 Days)

Photographs: Communication from Indian Bank & Training Certificate received by the students



Outcomes of the MoU/Linkage:

Practical knowledge gained by the students via training at Indian Bank also helped the students get placement in a very reputed organization like Capgemini Technology Services Private Limited, Mannappuram Finance Limited, Axis Bank, HSBC, I Source, Home First Finance Company India Limited, Kotak Mahindra Bank, Tamil Nadu Rural Transformation Project, and Societe Generale Global Solutions.

Summary on the MoU signed between Department of Microbiology, Alagappa University, India; National Centre of Excellence (MHRD), Thiyagarajar College, Madurai.

Objective of the MoU

The main aim of this MoU agreement is to encourage voluntary interaction and cooperation and to promote friendship between the two departments for their mutual benefit. Both departments recognize the value of cooperative educational experiences that integrate theory and practice and promote campus internationalization.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- International seminar on waste Management was organized by the Department of Microbiology, Thiyagarajar College, Madurai & Nottingham Trent University (NTU), United Kingdom on 3rd September, 2018. In that Seminar Dr. A. Arun, Professor, Department of Microbiology, Alagappa University delivered a valedictory address.
- Delivered an invited lecture on 9th Feb, 2019 - State Level Intercollegiate Student Meet (ZOOMIC - 19), Organized by Thiyagarajar College, Madurai.

Duration of the MoU: 2018-2021 (3 years)

Photographs of the MoU



Summary on the MoU signed between Department of Microbiology, Alagappa University, India ; Tianjin University, China

Objective of the MoU

The main aim of this MoU agreement is to encourage voluntary interaction and cooperation and to promote friendship between the two departments for their mutual benefit. Both departments recognize the value of cooperative educational experiences that integrate theory and practice and promote campus internationalization.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Two-Day SPARC Sponsored International Symposium on Bioplastics (ISB -23) 12th and 13th September, 2023.
- Indian Student Visit to Tianjin university – Ph. D Scholars Nithya Rathinavel, T. Angelin Swetha, Mr. K. Mohan Rasu, Mr. G. Sivaprakash

Duration of the MoU: 2019-2024 (5 years)

Photographs of MoU:



Outcomes of the MoU

In this context, several fruitful results were obtained and several the results were published in highly reputed journals. Based on this, the following publications were made as a part of the MoU.

1. Hai Jiang, Yingli Ding, Juyang Liu, **Arun Alagarsamy**, Li Pan, Dongpo Song, **Kunyu Zhang**, Yuesheng Li. 2020. Super-Tough Poly (lactic acid) and Sustainable Elastomer Blends Compatibilized by PLLA-b- PMMA Block Copolymers as Effective A-b-C Type Compatibilizers. Industrial & Engineering Chemistry Research. American Chemical Society (ACS). 59: 13956 – 13968. <https://doi.org/10.1021/acs.iecr.0c00988> (IF 3.72)
2. K.Mohanrasu, R. Guru Raj Rao, G.H.Dinesh, Kunyu Zhang, G. Siva Prakash, Dong-Po Song, Sudhakar Muniyasamy, Arivalagan Pugazhendhi, J.Jeyakanthan, **A.Arun**. 2020. Optimization of media components and culture conditions for polyhydroxyalkanoates production by *Bacillus megaterium*. Fuel, 271, 117522. <https://doi.org/10.1016/j.fuel.2020.117522> (IF 6.609)

Summary on the MoU signed between Department of Bioelectronics and Biosensor, Alagappa University, India & Tangshan Polytechnic College, China

Objective of the MoU

The main aim of this MoU agreement is to develop a technological relationship between the two departments and to encourage cooperation. The importance of cooperative learning opportunities that combine theory and practice and support campus internationalization is acknowledged by both departments. Both the departments agree to encourage the following activities case by case such as:

- Exchange of materials in education and research, publications and academic information.
- Exchange of faculty and research scholars.
- Exchange of students to pursue degree /PG Dip/Ph.D. programmes.
- Impart the mutual exchange of language learning.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Mr. Liu Zhaoqi was invited to continue his Ph.D. during this period

Duration of the MoU: 08-04-2019 to 08-04-2022

Outcomes of the MoU

According to the MoU signed on 08.04.2019 with Tangshan Polytechnic College, China, one paper was published by our research scholar and Chinese counterpart.

- A novel electrochemical sensor based on Fe-doped MgNi₂O₃ nanoparticles for simultaneous determination of dopamine, uric acid, nicotine and caffeine over very wide linear ranges, S. Lokeswara Reddy, C. Arul, Liu Zhaoqi, N. Lavanya, C. Sekar, Journal of Electroanalytical Chemistry, Volume 878, 2020, 114648, ISSN 1572-6657, <https://doi.org/10.1016/j.jelechem.2020.114648>.



Summary of the Memorandum of Understanding (MoU) between the Department of Bioinformatics at Alagappa University, India, and the School of Biological Science, Anyang Institute of Technology, Henan Province, China

Objective of the MoU

The objective of the MoU is to establish a collaborative framework between ALU and Anyang Institute of Technology, fostering mutually beneficial engagements. The MoU aims to facilitate the exchange of expertise and knowledge in the fields of biological science, nanomaterial synthesis and Characterization. The overarching goal is to enhance the capabilities and advance scientific understanding in Drug designing using computational approaches against different infectious diseases.

- To improve the international Vision between Alagappa university and Anyang Institute of Technology for extensive research opportunities.
- To provide opportunities for exchanging teachers and students
- Building academic and Scientific Collaboration by building joint research Centre and platforms.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed

- Research paper presented entitled “Nano bioinformatics in Biomedical Applications” in international convention and exhibition centre at School of Biological Science, Anyang Institute of Technology, Henan Province, China
- Discussed with Dr. Yao Wang Anyang Institute of Technology, Henan Province, China to strengthen the collaborative efforts between the two institutions and contribute to advancements in the field of Bioinformatics.

Duration of the MoU: 2019-2024 (5 years)

Photographs of the MoU



MoU signed at School of Biological Science, Anyang Institute of Technology, Henan Province, China



Research collaboration Paper Presented at School of Biological Science, Anyang Institute of Technology, Henan Province, China

Outcome of the MoU

In this context, several fruitful results were obtained and several the results were published in highly reputed journals. Based on this, the following publications were made as a part of the MoU.

- Research Paper Published by Dr. P. Boomi entitled “In silico Screening of Natural Phytochemicals Towards Identification of Potential Lead Compounds to Treat COVID-19” *Frontiers in Molecular Biosciences*, 2021; 8, Article 637122
- Research Paper Published by Dr. P. Boomi entitled “Gut microbiota contribution to selenium deficiency induced gut–liver inflammation” *Biofactor*, 2023;1–15.

Summary on the MoU signed between Department of Energy Science, Alagappa University, India & SPD Laboratory, Japan for the Collaborative Research Activities

Objective of the MoU

The key objective of this MoU agreement is to encourage voluntary interaction and cooperation and to promote relationship between the SPD and ALU desire to further advance scientific knowledge and discoveries through the collaborative research activities for the purpose of mutual benefits. The MoU sets the framework for mutually beneficial collaboration between SPD and ALU this collaboration focuses on the exchange of the following areas.

- SPD will offer a sponsorship program under which scientific and trainees from ALU will come to Japan to learn and enhance their professional expertise in Solar Energy Materials.
- Design knowledge, technical, and scientific consultation, research activities and
- Personal training for faculty, PG students and research scholars on Solar Energy Materials.
- Exchange of faculty and research scholars.
- Exchange of students to pursue PGDip/ Ph.D. programmes.

Activities of the MoU Undertaken

The following activities were under taken after the MoU agreement signed:

- Dr. S. Karuppuchamy, delivered an invited lecture on “Perovskite Solar Cells: Current status and future prospects” at SPD Laboratory, Japan
- Dr. S. Karuppuchamy, visited SPD Laboratory, Japan and undergone short training for Dye sensitized solar cells
- K. Ramachandran, Research Scholar, Dept. of Energy Science visited SPD Laboratory, Japan for collaborative research work.
- Prof. S. Kaneko delivered lecture on “Solar Energy Materials” at Dept. of Energy Science, Alagappa University.
- Dr. S. Karuppuchamy, Delivered Invited Lecture on “Large Area Perovskite Solar Cells”, at SPD Laboratory, Japan.

Duration of the MoU: 2019 to2024 (five Years)

Photographs of the MoU



Outcomes of the MoU

In this context, several collaborative research activities were initiated as a part of the MoU.

- Dr. S. Karuppuchamy, serving as a Scientific Advisor (Honorary Position), SPD Laboratory, Japan 2019/04 – 2024/03.

Summary on the MoU signed between Department of International Business, Alagappa University, India & E-ship Global Logistics Chennai

Objective of the MoU

The main aim of this MoU agreement is to promote practical internship to students by introducing the EXIM procedures and documentation and making them employable before they graduate and to provide placement assistance to students. The Department recognize the value of cooperative assistance from the company that integrate theory and practice and promote campus placements. Both the department and company agree to encourage the following activities case by case such as

- Providing Summer Internship to students
- Collaborating the department in conduct of seminars and conferences
- Placement Opportunities provided to the outgoing students
- Conduct of department level placement drive

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Mr. M. Selvakumar, Chief Executive Officer, E-ship global logistics, Linghi Chetty Street Parry's Corner, Chennai. Tamilnadu 600001, Sept 5th 2019.

Duration of the MoU: 2019-2021 (3 years)

Photographs of the MoU



Outcomes of MoU

1. Assisted the department in providing internships to the students introducing them to EXIM procedures and documentation, trained them in auditing the cargo handling of goods.
2. The company CEO disseminated his practical experience in the seminar conducted by the department.
3. The company has provided placement to top performing students.

Summary on the MoU/Linkage signed between Department of Bank Management, Alagappa University, India With Indian Bank and Thiruchirappalli City and Ramanathapuram Co-operative bank Ltd

Objective of the MoU/Linkage

As a part of MBA (B&I) programme the students undergo 45 days training programme in banks in India. The department of Banking Management is having tie-up with Indian Bank as well as Cooperative banks for providing practical training for the final year students. All the students are deputed to various branches of Indian Bank and Cooperative Bank (The Ramanathapuram District Central Cooperative Bank and The Thiruchirappalli Hirudayapuram Co-Operative Bank.Ltd)

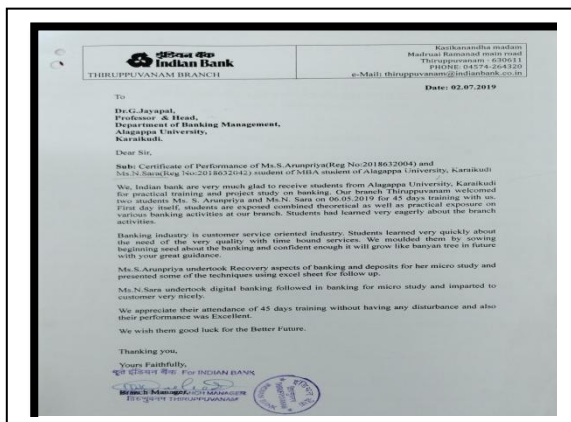
Activities of the MoU/Linkage Undertaken: Importing Training facilities to the students, which helps them to -

- Enhance their marketing skills for promoting of banking and Insurance products.
- Experience the field work relating to recovery of loans.
- Enrich the students' knowledge on practical aspects of banking.

Duration of the MoU/Linkage: April 2019 (45 Days)

Photographs of the MoU/Linkage: (1) Communication from Indian Bank (2) Training Certificate received by the students from the Cooperative Bank

(1)



(2)



Outcomes of the MoU/Linkage:

In addition to the theoretical aspects ,practical aspects gained through bank training helped to students to get placed in reputed banks and financial intuitions like ZENTA, Integrated Enterprises (India) Private Ltd, HDFC Bank, Innovation Direct Employment Services, Aadhiyan Infotech, Integrated Enterprises (India)Private Ltd, Team Space, Karur Vysya Bank, Tata Capital Housing Finance Limited, Nippon Paints Private Limited, Shiram Finance, 7S Associates, Mahindra Business Solutions, Chola Business Services Limited and Muthoot Finance Ltd.

Research Collaboration and Delivery of Invited Lecture at Kyushu Institute of Technology, Japan

Event Date: March 1st, 2019

Location: Kyushu Institute of Technology, Japan

Visitor: Dr. S. Karuppuchamy

Lecture Title

"Development of one-dimensional core/shell structured materials for dye sensitized solar cells."

Objective of the Visit

The primary objective is to share knowledge and advancements in the field of dye sensitized solar cells, focusing on the development of one-dimensional core/shell structured materials. This visit intended to foster research collaboration and academic exchange between the Kyushu Institute of Technology and Department of Energy Science, Alagappa University.

- To present the latest research findings on the development of one-dimensional core/shell structured materials and their application in dye sensitized solar cells (DSSCs).
- To foster academic and research collaboration between Alagappa University, India, and Kyushu Institute of Technology, Japan, in the field of material science and solar cell technology.
- To explore the potential of core/shell nano structures in improving the efficiency and durability of dye sensitized solar cells.
- To encourage the exchange of knowledge and techniques related to the synthesis and characterization of nanostructured materials for renewable energy applications.
- To discuss future trends and challenges in the field of photovoltaics, with a focus on the role of nanostructured novel materials in next generation solar cells.

Activities

- Dr. S. Karuppuchamy delivered an in-depth lecture on his latest research findings associated to dye sensitized solar cells, highlighting the innovative approach of using one-dimensional core/shell structured materials.
- Post lecture discussions were held with faculty and students, empowering an exchange of ideas and potential collaboration opportunities.
- A tour of relevant research facilities at the Kyushu Institute of Technology was conducted, showcasing their current projects and technologies in solar cell development.

Photographs



Outcomes

- The event was a momentous opportunity for knowledge exchange, contributing to the ongoing discussion between researchers in the field of solar energy.
- Established new connections and deliberated potential collaborative research projects between faculty members at the Kyushu Institute of Technology.
- The visit arranged the foundation for future research collaborations and student exchanges between the two institutions, pointing to advance the study and application of dye sensitized solar cells.

Research Collaboration and Delivery of Invited Lecture at Toyota Technological Institute, Japan

Date: February 27th, 2019

Resource Person: Dr. S. Karuppuchamy, Professor and Head, Department of Energy Science,
Alagappa University, Karaikudi, India

Title: The Future of Low-Cost Solar Cells in India

Objective

The invited lecture aimed to discuss the advancements and future prospects of low-cost solar cells in India, emphasizing sustainable energy solutions. The event required to inspire collaborative research and innovation between Toyota Technological Institute, Japan, and Alagappa University, India.

- To present and discuss the innovative strategies and advancements in low-cost solar cell technology in India.
- To explore collaborative opportunities in renewable energy research and development.
- To discuss the impact of low-cost solar cells on India's energy security and sustainability.

Activities

- Dr. S. Karuppuchamy shared insights on the current state and future potential of low-cost solar cell technologies in India, highlighting innovative methods to make solar energy more accessible and inexpensive.
- Discussions with faculty and students on the challenges and opportunities in renewable energy research.
- Visits to state-of-the-art research laboratories pointing on solar energy and sustainable technologies at Toyota Technological Institute.

Photographs of the Collaboration



Outcomes

- Strengthened academic and research ties between the Toyota Technological Institute, Japan and Alagappa University, focusing on development of Energy materials and sustainable energy solutions.
- Initiated fruitful discussion on potential collaborative projects for development of affordable solar cell technologies.
- Increased awareness among students and faculty regarding the significance and influence of renewable energy research in addressing global energy challenges.

**Summary on the MoU Signed between Crustacean Molecular Biology and Genomics Lab,
Department of Animal Health & Management, Alagappa University, India and The
Fisheries Science Institute, Chonnam National University, Korea**

Objective of the MoU

The main aim of this MoU agreement is to encourage voluntary interaction and cooperation and to promote friendship between the two departments for their mutual benefit. Both departments recognize the value of cooperative educational experiences that integrate theory and practice and promote campus internationalization. Both the departments agree to encourage the following activities case by case such as

- Exchange of materials in education and research, publications and academic information.
- To enhance the relationship between the faculties and universities.
- To develop the academic and cultural interchange in the areas of education and other activities.
- Planning and operation of joint research and related meetings.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Faculty and students from both university departments have jointly published their research and findings in reputed journals.

Duration of the MoU: 2019-2024 (5 years)

Outcomes of the MoU

Based on this MOU, the following research papers were published in highly reputed journals.

1). Yazhiniprabha, Mariappan, Narayanan Gopi, Shahid Mahboob, Khalid A. Al-Ghanim, Fahad Al-Misned, Zubair Ahmed, Mian Nadeem Riaz, Jeyachandran Sivakamavalli, Marimuthu Govindarajan, and Baskaralingam Vaseeharan. "The dietary supplementation of zinc oxide and selenium nanoparticles enhance the immune response in freshwater fish *Oreochromis mossambicus* against aquatic pathogen *Aeromonas hydrophila*." *Journal of Trace Elements in Medicine and Biology* 69 (2022): 126878.

Summary on the MoU signed between Department of Mathematics, Alagappa University, India & Post Graduate and Research Department of Mathematics, Thiagarajar College, Madurai

Objectives of the MoU

The main aim of this MoU agreement is to promote academic co-operation and to enhance teaching-learning process and research in both of the institutions.

- To encourage exchange of expertise of the faculty between these two institutions.
- To organize National /International workshops, Conferences and Seminars jointly by these two institutions.
- To Publish Collaborative Research papers in the National/ International research journals.
- To utilize the resources available in the library of both institutions for the benefit of Scholars, Students and Faculty.
- The publications and intellectual property resulting from this MOU will be shared jointly.

Duration of the MoU: 2019-2022 (3 years)

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- National Webinar on Recent Trends in Pure and Applied Mathematics was conducted on October 12, 2021.
- Two-day International Webinar on Applied Mathematics was conducted on April 19-20, 2022.
- Two-day International Webinar on Neoteric Applications in Mathematics was conducted on November 08-09, 2022.

Photographs of the MoU



THIAGARAJAR COLLEGE, MADURAI
An Autonomous Institution affiliated to Madurai Kamaraj University
Reaccredited with "A+" Grade by NAAC
Ranked 52nd in NIRF 2022

**International Seminar / Webinar on
NEOTERIC APPLICATIONS IN MATHEMATICS**

Organized by
PG & Research Department of Mathematics
in collaboration with
School of Mathematics,
Alagappa University, Karaikal

DATE: 08/11/2022
08/11/2022

SESSION 1: 08/11/2022 - 09:30 to 10:30 IST
 Session 2: 08/11/2022 - 11:00 am to 12:00 pm
 Session 3: 08/11/2022 - 12:30 pm to 01:30 pm
 Session 4: 08/11/2022 - 10:00 am to 11:00 pm
 Session 5: 08/11/2022 - 12:00 pm to 01:00 pm

E - Certificates will be provided
Registration Link : <https://forms.gle/ZDElMxHdQLZsg3nBB>

ORGANIZING SECRETARIES
Mrs. V. Kamaladevi
Mrs. S. Anjali

PRINCIPAL
Dr. D. Pandiaraj

CONVENERS
Dr. M. Senthil Kumaran
Head, PG & Research Department of Mathematics,
Thiagarajar College, Madurai
Dr. N. Anushagan
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**Why Modeling is Necessary for Real
Life Situations?**

Raja Ramachandran

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Outcomes of the MoU

We have successfully co-organized one national and two international webinars in this context. Each of the webinars featured an invited talk by one of our faculty members: Dr. J. Vimala, R. Raja, and S. Amutha.

Summary on the MoU Signed between Nano biosciences and Nano pharmacology Division, Department of Animal Health and Management, Alagappa University, India and Research Chair in Laser Diagnosis of Cancers, Department of Physics and Astronomy, College of Science, King Saud University, Saudi Arabia

Objective of the MoU

The main aim of this MoU agreement is to encourage voluntary interaction and cooperation and to promote friendship between the two departments for their mutual benefit. Both departments recognize the value of cooperative educational experiences that integrate theory and practice and promote campus internationalization. Both the departments agree to encourage the following activities case by case such as

- Exchange of materials in education and research, publications and academic information.
- To enhance the relationship between the faculties and universities.
- To develop the academic and cultural interchange in the areas of education and other activities.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Faculty and students from both university departments have jointly published their research and findings in reputed journals.

Duration of the MoU: 2019-2024 (4 years)

Outcomes of the MoU

Based on this MOU, the following research papers were published in highly reputed journals.

1). Rekha R, Vaseeharan B, Vijayakumar S, Abinaya M, Govindarajan M, Alharbi NS, Kadaikunnan S, Khaled JM, Al-Anbr MN. Crustin-capped selenium nanowires against microbial pathogens and Japanese encephalitis mosquito vectors - Insights on their toxicity and internalization. J Trace Elem Med Biol. 2019 Jan;51:191-203. doi: 10.1016/j.jtemb.2018.10.017. Epub 2018 Oct 18. PMID: 30466931.

Summary on the MoU signed between Department of Bioinformatics, Alagappa University, India & Saveetha Dental College, Chennai

Objective of the MoU

- Establish long term relations between Alagappa University and Saveetha Medical College and hospital in order to perform research of excellent standards in pharmacogenomics, Bioinformatics and Health sector.
- Explore and support collaboration and research projects in specific fields.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed

- Appointed as a **Distinguished Adjunct Faculty** by invitation at Saveetha Dental College and Hospitals, Chennai from 10th January 2019.
- Lakshmanan Loganathan, **Kannan Rajendran** and **Karthikeyan Muthusamy presented poster** on the title “Computational understanding on molecular mechanism of hypertensive drug metabolizing enzymes and its implication on developing potential lead molecules” in International Conference of Structural Bioinformatics and Drug Design-ICSBCADD-2019 on December 11-13, at Department of Bioinformatics, Alagappa University, Karaikudi, Tamil Nadu, India. (ISBN: 978-93-89658-15-6)
- John Marshal Jayaraj, **Kannan Rajendran**, Chandrasekhar Kesavan and **Karthikeyan Muthusamy presented poster** on the title “Deleterious nsSNPs screening and molecular dynamics study on human Klotho for their effects on protein structure, stability and function” in International Conference of Structural Bioinformatics and Drug Design-ICSBCADD-2019 on December 11-13, at Department of Bioinformatics, Alagappa University, Karaikudi, Tamil Nadu, India. (ISBN: 978-93-89658-15-6)
- Vinitha Sivasubramaniyan, Lakshmanan Loganathan, **Kannan Rajendran**, Mehboobali Pannipara, Abdullah G. Al-Sehemi and **Karthikeyan Muthusamy presented poster** on the title “Structure-based Screening of Multi-targeting Inhibitors for Mpro, S-protein and M-protein of SARS-CoV-2” in 4th International Conference on Recent Trends in Microbiology-RTM-2023 on January 05-06, at Department of Microbiology, Alagappa University, Karaikudi, Tamilnadu, India.
- **Delivered the lecture on SNPs, Mutations & Genomic Instability associated with Dental Diseases and treatment: a Pharmacogenomics perspective view** at Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Chennai (03.12.2022)

Duration of the MoU: 2020-2025 (5 years)

Outcomes of the MoU

In this context, several fruitful results were obtained and several the results were published in highly reputed journals. Based on this, the following publications were made as a part of the MoU.

1. Book chapter by **Karthikeyan Muthusamy**, Manikandan Selvaraj, Lakshmanan Loganathan and **Kannan Rajendran**, edited by Leon V. Berhardt: Pharmacogenetics and Pharmacogenomics: A Combinatorial Genetic and Computational Approach for the Drug Development in Vol 165, chapter 1; "Advances in Medicine and Biology"; Nova Science Publishers.
2. Lakshmanan Loganathan, Krishnasamy Gopinath, Vadivel Murugan Sankaranarayanan, Ritushree Kukreti, Kannan Rajendran, Jung-Kul Lee, and **Karthikeyan Muthusamy**. Computational and Pharmacogenomic Insights on Hypertension Treatment: Rational Drug Design and Optimization Strategies. *Current Drug Targets*. 2020; 21(1):18-33. **(IF: 3.10)**.
3. Selvaraj, Manikandan, Lakshmanan Loganathan, John M. Jayaraj, Krishnasamy Gopinath, Kannan Rajendran, Mehboobali Pannipara, Abdullah G. Al-Sehemi, and **Karthikeyan Muthusamy***. "In silico Investigation of Immunodominant Antigenic Regions, Helper T Lymphocyte, and Cytotoxic T Lymphocyte Epitopes Credentials for SARS-CoV-2 Vaccination." *Current Chinese Science* 2, no. 3 (2022): 226-242.
4. Lakshmanan Loganathan, Kannan Rajendran and **Karthikeyan Muthusamy**. Theoretical investigation on known rennin inhibitors and generation of ligand-based Pharmacophore models for hypertension treatment. *Journal of Biomolecular structure and Dynamics*. 28th October 2023 **(IF: 5.235)**.
5. Joint research proposals submitted to various funding agencies like TANSCHÉ and ICMR for clinical collaboration.

Summary on the MoU Signed Between Department of Commerce Alagappa University and Chamber of Commerce & Industry, Karaikudi

Objectives of MoU

The main aim of the MoU agreement is to promote the students with practical exposure in the business and industry field and to maintain the relationship between the Institution and Industry. The students know the Industrial activities in the study periods. Students exchange between Institutions and industry. To provide on-the-job training during the study periods. The students learn the business exposures during the study period.

The MoU provides 15 days of internship training in all four semesters of M. Com students. In addition, 45 days of internship training at the end of the first semester. To provide internship facilities to the M. Com students total of 105 days organized by the training Chamber of Commerce and Industry Karaikudi. During the internship training, the students learn about real work environments and experiences. The student's industrial training will also develop skills in work ethics, communication, management, and others. The student relates theoretical knowledge with its applications in the manufacturing industries.

Duration of MoU

For the period of three years from 2020-2023 after the compilation of the three years the renewal of the MoU during the year 2023



Outcomes of the MoU

The major outcomes of the MoU with the Chamber of Commerce industry, Karaikudi.

1. The students explore career alternatives before graduation.
2. Integrated theory and practice to the students.
3. Access the interest and availability in the field of study.
4. Learn to appropriate work and its functions in the economy.
5. Develop communication interpersonal and other critical skills in the job interview process.
6. Develop the work habits and attitudes necessary to job success.
7. Build a record of work experiences Acquire the employment contact leading directly to a full-time job the following graduation.

Summary on MOU in between Alagappa University, India and Western Norway University of Applied Sciences, Norway in the field of research and higher education

Objectives of the MOU

The primary objective of the MOU signed in the fields of renewable energy and nanotechnology was to facilitate the exchange of students and staff for research and development purposes. Among various clean energy resources, the development of nanostructures for clean energy applications via water splitting approach is the most promising way to meet the hydrogen energy demand. Therefore, the signed MOU has played a vital role in creating new efficient and cost-effective technologies for future clean energy applications. Both the departments agree to encourage the following activities case by case such as;

- To explore the research ideas in new-fangled environment.
- To investigate innovative research concepts in a modernized setting.
- Exchange of materials in education and research, publications and academic information.
- Exchange of faculty and research scholars.
- Convey the mutual exchange of language learning.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Dr. M. Isacfranklin was invited to work as Research Associate in Norway for one year (July 2023 – June 2024).
- Professor Dhayalan Velauthapillai, Western Norway University of Applied Sciences, Norway has offered a UTFORSK project fellowship to two PhD scholars, Ms. S. Swathi and Mr. V. Balaji. Both are pursuing their PhD in the Department of Physics, at Alagappa University.
- Mr. M. Isacfrankin, and Ms. S. Swathi, research student from the Department of Physics, Alagappa University were invited to present a talk on “Photoelectrochemical hydrogen production” and "Non-Noble bifunctional electrocatalysts for water splitting application" as an invited speaker at the HyValue Norway Webinar On 11 June 2021 and On 26 April 2023, respectively.

Duration of the MoU: 2020-2023 (3 years)

Photographs of the activities undertaken under MoU



The researchers of Alagappa University contributed enormously in their fields of research and able to synthesize different novel materials and characterize various samples in order to study their physico-chemical properties. As a result, they achieved numerous fruitful outcomes in form of publication in highly prestigious journals. Furthermore, one of the innovative works has been submitted for a patent. The research articles published in the highly reputed journals are included below:

1. Isac franklin Melkiyur, Asaithambi Sankaiyaa, P. Senthil Kumar, Selvakumar Pitchaiya, Yuvakkumar Rathinam, Ravi Ganesan , Dhayalan Velauthapillai, A Comprehensive Review on Novel Quaternary Metal Oxide and Sulphide Electrode Materials for Supercapacitor: Origin, Fundamentals, Present Perspectives and Future Aspects, Renewable and Sustainable Energy Reviews, Volume 173, March 2023, 113106(**I.F: 16.799**).
2. Swathi, S., Yuvakkumar, R., Ravi, G., Thambidurai, M., Nguyen, H.D. and Velauthapillai, D., 2023. Ternary Copper Iron Sulfide Micro Flowers Anchored on Reduced Graphene Oxide for Water Splitting. ACS Applied Nano Materials, 6(8), pp.6538-6549. (**I.F: 5.9**).

Summary of the MoU signed By Alagappa Institute of Skill Development CompTIA Technology India Private Limited (CompTIA)

Objective of the MoU

- The primary aim of this partnership is to work with AISD/EIC Hub towards training and certifying their students with the latest technology competencies with the objectives of CompTIA's vendor-neutral certification programs. They Faculty enablement to deliver high quality training to students on CompTIA certification programs.
- The following benefits of CompTIA are:

- Creation of a resource pool of CompTIA trained and certified professionals to boost the existing skill level in the country.
- Certifying the students on CompTIA vendor neutral global certifications.
- They provide free internship related to Cyber Security to our B.Voc and M.Voc students

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement was signed:

- The students are attended the training and learnt the skills in cyber security and IT infrastructure career. The CompTIA certification is valid across the globe at a highly discounted rate.
- Provided training to the faculty members in the networking, cyber security and recent trends in informatics.
- Guest Lectures are conducted in the AISD Premise for the students of B.Voc. & M.Voc. Software Development and PG Diploma students.

Duration of the MoU: 2020-2021 (1 year)

Photographs of the MoU



Outcomes of the MoU

- It provides internship to the students and offer training to the faculty members with comp TIA certification.
- Inclusion of Comp TIA certification content in the course curriculum of AISD/EIC HUB.
- Access to Comp TIA Instructor Network Portal and instructional delivery tools without any charges.
- Workshops/Technical symposium/ seminars are jointly organized by the department and institute.

Summary of the MoU signed By Alagappa Institute of Skill Development Anugraha Fashion Private Limited Kangeyam, Tirupur

Objective of the MoU

The aim of the MoU agreement is intended to recognize the general basis for a cooperative and a collaborative working relationship between the industry and academic institute. Both Institute and industry have mutual intentions to jointly work on projects required for industries and research needs, with learned faculty of good industrial experience and promising students, jointly agree to exchange their expertise for mutual benefit and growth, on the specific domain with the following activities

- Providing students with practical experience through internships, apprenticeships, or training programs that complement their academic studies.
- Organizing workshops, conferences and symposium with joint participation of the faculty and the industries and encourage experts from industry to visit the institution to deliver lectures.
- Provides professional consultancy by the faculty to the industries and facilitate industrial testing by faculty and technicians at site or in Laboratory.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement was signed:

- The General Manager of the company **Mr. Mohan** delivered a lecture titled on Emerging **Trends and Opportunities in the Clothing Sector** in the **“International Conference on Skills for Clothing Sector – Transforming the Training functions”** organised by Alagappa Institute of Skill Development which is held on 22nd & 23rd January 2020.
- The Company offers internship training to the students of B.Voc. & M.Voc. Fashion Technology in their industry.
- The Company may participate in campus recruitment drives, when it does so, the Company may give priority to the students of this Department.
- The Company allows industrial / field visits to the faculty and the students of the Department in their premises to enable them to get practical exposure.

Duration of the MoU: 2020-2023 (3 years)

Photographs of the MoU



Outcomes of the MoU

1. The students of Alagappa Institute of Skill development got placed in the position of Junior merchandiser, quality controller, Testing Lab Trainer, production Assistant of the company.
2. The industry partners are involved in the curriculum design of B.Voc. and M.Voc. fashion technology and PG Diploma in Fashion Designing. Suggestions were given by industry experts to inculcate the industrial process in production and quality management process of the curriculum
3. Arrange Visits of industry executives and practising students to the Institute for seeing research work and laboratories, discussions and delivering lectures on industrial practices, trends and experiences



Summary of the MoU signed By Alagappa Institute of Skill Development AIC-NIFT-TEA Incubation Centre for Textiles and Apparel, Tirupur

Objective of the MoU

The MOU aims to facilitate collaboration between the Atal Incubation Centre (AIC), National Institute of Fashion Technology- Tirupur Export Association (NIFT-TEA), to create a supportive ecosystem for start-ups and aspiring entrepreneurs in the textiles and apparel industry. This helps to develop business potential concepts and ideas building innovative solutions and ideas, joint industrial projects and joint research activities.

The following Objectives are:

- The institute will provide its incubation facilities/ workshops/ hands on training to the students.
- Provides Skill Development, Entrepreneurship/incubation support and career guidance and R&D services in the fields of textile and apparel services.
- Facilitate effective utilisation of the intellectual capabilities of the faculty of institute provides a significant input to them in identifying new technology and sustainable Business, encouraging research collaborations and promote entrepreneurial services.
- To train the students on entrepreneurial skills in order to bridge the skill gap and fostering entrepreneurship.
- To provide the valuable inputs in teaching and training methodology subject to the approval by the concern board of studies which may be felicitating the students integrated with the curriculum for start ups

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement was signed:

- Mr.S. Periyasamy, CEO, AISC-NIFT-TEA Incubation Centre for Textiles and Apparel, NIFT-TEA, Tirupur participated in the International conference on “*International Conference on Skills for Clothing Sector – Transforming the Training functions*” organised by Alagappa Institute of Skill Development and delivered special address of the conference which is held on 22nd & 23rd January 2020.
- They provide incubation facilities, workshops, and hands-on training to the students in textiles and apparel.
- Will give valuable inputs to the institute in teaching and training methodology subject to the approval by the concerned board of studies which may facilitate the students to get an idea about start-ups.

Duration of the MoU: 2020-2023 (3 years)

Photographs of the MoU



Outcomes of the MoU

- The students are able to identify new technology and sustainable Business ideas, encouraging research collaborations and promote entrepreneurial services among student community.
- The students are able to take up small startups with their innovative ideas and this MoU support for product development and market avenues of their startups.
- The students are able to take up joint research activities and projects of textiles and apparel fields.
- This MoU will promote a good academic & and industry-oriented relationship between AIC-NIFT-TEA Incubation Centre for Textiles and Apparel.

Summary on the MoU/Linkage signed between Department of Bank Management, Alagappa University and Collaboration with Confederation of Indian Industry

Objective of the MoU/Linkage

The Association of Indian Universities, in collaboration with the Confederation of Indian Industry (CII), announced the AIU-CII “Smart Manager Programme” for graduates in all disciplines. The concept of the program is a viable alternative to internships with measurable learning outcomes. The Revered Registrar of our University had given the circular to all the departments to ensure and encourage students to participate in the program. The program is delivered digitally over Android, iOS, and web apps through highly interactive content.

Activities of the MoU/Linkage Undertaken:

The CII Smart Manager Certificate Programme is a job readiness program designed to help young graduates differentiate themselves in the corporate world by acquiring key professional skills. The program is a viable alternative to an internship, which, even when available, does not always provide key managerial skills to graduates. The program covered the following areas:

- Skills needed to start a venture or business
- Professional Personality and Etiquette
- Managing time and stress
- Tips to succeed in the interviews.

Duration of the Programme: November to December 2020(45 Days)

Photographs of the MoU/Linkage: CII Training Certificates received by the students



Outcomes of the MoU/Linkage:

The training program helped the students acquire skills required for the job market. In addition to the theoretical aspects, practical aspects gained through CII training helped students get placement in reputed banks and financial intuitions like HDFC Bank, Samasta Microfinance Limited, Aadhiyan Infotech, Tata Consultance Services Limited, Anchoron Global Solution LLP, Nlelesen IQ, Karur Vysya Bank, and BYJUS.

Summary on the MoU signed between Department of Bioinformatics, Alagappa University, Karaikudi & Vision Research Foundation, Chennai

Objective of the MoU

The primary objective of this MoU agreement is to foster mutual benefit through a formal linkage, aiming to develop new collaborative teaching and research programs in the innovative fields of Structural Bioinformatics, Biochemistry, and Molecular Biology. In consideration of the premises and the mutual covenants hereinafter contained, the parties agree to promote research with the aim of producing significant outcomes in the form of patents and publications in highly indexed Scopus journals.

- Joint Research & Development projects in the areas of Biotechnology, Bioinformatics, Structural Biology, and Molecular Biology within the scope of basic medical and allied sciences, funded by external funding agencies;
- Graduate, Postgraduate, and Doctoral Research Project work and training to be conducted at both SRU and ALU;
- Short-term and long-term developmental programs on topics of mutual interest.

Activities of the MoU Undertaken

The following activities were undertaken after the signing of the MoU agreement:

- Ms. Hemavathy Nagarajan, a doctoral student pursuing Ph.D. under the guidance of Prof. J. Jeyakanthan, is utilizing the in-vitro expertise at the Central Research Instrumentation facility at Vision Research Foundation for her Ph.D. doctoral thesis.
- Ms. Sneha Subramanian, another doctoral student pursuing Ph.D. under the guidance of Prof. J. Jeyakanthan, underwent a 10-day short-term training at Vision Research Foundation.
- The server and computer facilities from the Centre of Bioinformatics at Vision Research Foundation have been utilized for the benefit of doctoral students from Alagappa University.
- A collaborative ICMR–Adhoc project (BMI/ADHOC/62/2022-23) has been initiated between Dr. Srujana Chitipottu, Associate Professor at the Centre of Bioinformatics, Vision Research Foundation, and Prof. J. Jeyakanthan from the Department of Bioinformatics at Alagappa University.

Duration of the MoU: 2021-2024 (3years)

Photographs of the MoU



Prof. J. Jeyakanthan visited Vision and Research Foundation to discuss future research and development projects.

Outcomes of the MoU

In this context, numerous valuable results were obtained and subsequently published in highly reputable journals. As part of the MoU, the following publications were produced.

1. Nagarajan, H., Samdani, A., Umashankar, V. et al. ((2022). Deciphering the conformational transitions of LIMK2 active and inactive states to ponder specific druggable states through microsecond scale molecular dynamics simulation. *J Comput Aided Mol Des* 36, 459–482. <https://doi.org/10.1007/s10822-022-00459-0>
2. Subramaniyan S, Nagarajan H, Vetrivel U, Jeyaraman J. Multilayer precision-based screening of potential inhibitors targeting Mycobacterium tuberculosis acetate kinase using in silico approaches. *Comput Biol Chem.* 2023 Dec; 107:107942. doi: 10.1016/j.compbiolchem.2023.107942.
3. Karthika A, Hemavathy N, Amala M, Rajamanikandan S, Veerapandian M, Prabhu D, Vetrivel U, Jung Chen C, Jeyaraj Pandian C, Jeyakanthan J. Structural and functional characterization of 6-phosphogluconate dehydrogenase in Plasmodium falciparum (3D7) and identification of its potent inhibitors. *J Biomol Struct Dyn.* 2024 Feb-Mar;42(4):2058-2074. doi: 10.1080/07391102.2023.2248271.
4. Malaisamy V, Alagesan K, Nagarajan H, Jayaraman M, Vetrivel U, Jeyaraman J. Biochemical and biophysical characterization of biosynthetic arginine decarboxylase from *Thermus thermophilus*. *J Biomol Struct Dyn.* 2024 Feb 12:1-18. doi: 10.1080/07391102.2024.2314753.

Summary of the MoU signed By Alagappa Institute of Skill Development HEBESEC TECHNOLOGIES

Objective of the MoU

The main goal of this MOU is to reduce the industry gap and will provide opportunities for students to work on live projects in the Cyber Security field. Hebesec will take the responsibility to improve technical education which has a role in creating an eco-system that enables the cyber environment.

The main objectives are:

- To develop various training programs, including but not limited to fellowships, PG, UG, Diploma, Certificates, and Short-term courses in the areas of Cyber Security with hands-on experience in Cyber Security Simulator labs.
- They facilitating internships for students, training faculty, technology standards development, and industry-institution collaboration for incorporation of ethics at the workplace and other relevant areas.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement was signed:

- Hony. Col. Prof.N.Rajendran, Vice Chancellor of Alagappa University inaugurates the Hebesec R&D Centre and PG Diploma in Cyber Security course in AISD Premise with the presence of Mr.S.Ram Sundar, Centre Head, AU- HRC Director of Hebesec Technologies, Chennai
- One year PG Diploma courses are offered to the computer Science and engineering students from the academic year 2021-2022.
- Both institutes are jointly organised the Hacakthon -2021 programme to the students of computer science and other allied subject students.
- Awareness programme about the Cyber security, cyber law and crime, how to use of cashless transaction conducted to the AISD Students.

Duration of the MoU: 2021-2024 (3 years)

Photographs of the MoU





Outcomes of the MoU

- Conducting Cyber Security workshops, seminars, and hackathons for providing internships to the B.Voc and M.Voc students. Industry participation will be encouraged so that these hackathons and workshops will function as placement opportunities.
- Selected final year students are suitably rewarded by way of fellowship, placements, and internships with the industries.

Summary of the MoU signed By Alagappa Institute of Skill Development ICT ACADEMY

Objective of the MoU

The aim of the MoU is to train the higher education teachers and students thereby exercises on developing the next generation teachers and industry ready students. The academy is focused to provide training in the areas of faculty Development, Students Skill development, entrepreneurship Development, youth empowerment, industry Institute Interaction, Digital empowerment and research & Publications.

The following Objectives for the students are:

- Shall support on student acquisition and screening process for the selection of students for the program.
- Internship program provides real-world experience that enables the students to put everything that they have learned into action.
- Engaging in collaborative work such as seminars, conferences, and workshops to broaden students' knowledge and also sharing knowledge and resources with the students.

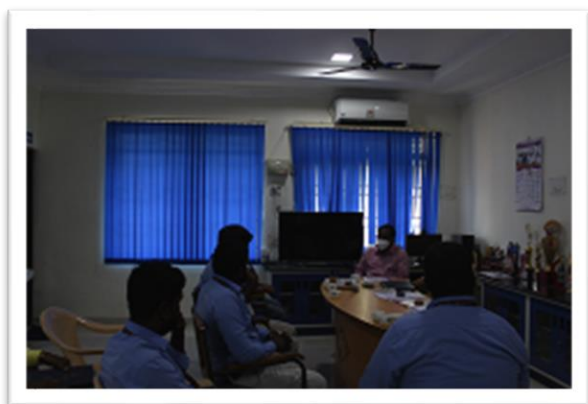
Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement was signed:

- Faculty Development programme is organised in the department to provide recent trends in informatics and equip them to teach current technology and trends in IT and Communication sector to the students.
- Conduct awareness sessions, mentoring sessions, and training sessions as per the project plan.

Duration of the MoU: 2021-2023 (2 years)

Photographs of the MoU



Outcomes of the MoU

The outcomes of the Memorandum of Understanding (MOU) for ICT Academy are expected to be instrumental in fostering holistic student development, industry-academia collaboration, and innovation in the field of information and communication technology (ICT).

Summary on the MoU signed between Department of History, Alagappa University, India & Institute of Archaeology and Tamil Nadu State Department and Archaeological Survey of India

Objective of the MoU

The scope of this Memorandum of Understanding (MoU) is to establish a framework for academic and research co-operation with specific roles and responsibilities between IA-TNSDA and Alagappa University (Department of History) in order to provide a platform to work together and for achieving the mutual objectives of both parties to highlight the cultural heritage of Tamil Nadu as revealed through archaeological studies and investigations under this MoU.

- To have an academic collaboration pertaining to Archaeological related subjects
- To conduct incentive training programmes in the field of Archaeology,
- Epigraphy and Temple Architecture and other scientific disciplines pertaining to Archaeological theories and methods for the benefits of Students and the staff members of both the parties
- To conduct collaborative archaeological explorations and excavations for the benefit of Students and public in Tamil Nadu and Kerala (ancient Tamillagam.)
- To conduct periodical Seminars, Conferences, Symposium etc in Historic and Archaeological themes.
- To exchange the knowledge of Tamil Culture and Archaeological investigations for the benefit of Students and public

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Department of History students actively participated in Archaeological Excavations at the Elanthakarai Site.
- Conducting Elanthakarai Archaeological Artefacts Exhibitions on Science Day at Alagappa University Every Year.

Duration of the MoU: 2020-2022 (3 years)

Photographs of the MoU



Outcomes of the MoU

In this context, several fruitful results were obtained. Based on this, the following publications were made as a part of the MoU.

Dr.AR.Saravanakumar & S.Rajavelu **Excavation at Ellanthakarai and its Surroundings (Season - I) in 2021**

**Summary on the MoU Signed between Department of Animal Health and Management,
Alagappa University, Karaikudi, India and Department of Biotechnology & Microbiology of
National College (Autonomous), Tiruchirappalli, India**

Objective of the MoU

The main aim of this MoU agreement is to encourage voluntary interaction and cooperation and to promote friendship between the two departments for their mutual benefit. Both departments recognize the value of cooperative educational experiences that integrate theory and practice and promote campus internationalization. Both the departments agree to encourage the following activities case by case such as

- Exchange of materials in education and research, publications and academic information.
- To enhance the relationship between the faculties and universities.
- To develop the academic and cultural interchange in the areas of education and other activities.
- Planning and operation of joint research and related meetings.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Faculty and students from both university departments have jointly published their research and findings in reputed journals.

Duration of the MoU: 2021-2026 (5 years)

Outcomes of the MoU

Based on this MOU, the following research papers were published in highly reputed journals.

1). Jeyavani, Jeyaraj, Ashokkumar Sibiya, Jeyachandran Sivakamavalli, Mani Divya, Elumalai Preetham, Baskaralingam Vaseeharan, and Caterina Faggio. "Phytotherapy and combined nanoformulations as a promising disease management in aquaculture: A review." *Aquaculture International* 30, no. 2 (2022): 1071-1086.

Summary on the MoU signed between Department of Tourism and Hotel Management, Alagappa University and Achireum LLC, USA

Objective of the MoU

Both the institutions are united by common interests and objectives, and they shall establish channels of communication and co-operation that will promote and advance their respective operations. The parties shall keep each other informed of potential opportunities and share all information that may be relevant to secure additional opportunities for one another. The co-operation between both the parties will facilitate effective utilization of the intellectual capabilities in providing significant inputs in developing suitable teaching/ training systems, keeping in mind the needs of an educational institution. This Memorandum of Understanding (MoU) sets up the framework for the cooperative and collaborative relationship between Achireum LLC and Department of Tourism and Hotel Management

- ❖ Ensure consistency and reliability of the gathered information
- ❖ Develop a sustainable and enriching ecotourism experience integrating native trees.
- ❖ Enhance visitor experience and understanding through informative and visually appealing signage.
- ❖ Establish an online presence to showcase the project and provide information to a wider audience.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- ❖ Review and verify collected data, address discrepancies, and organize information in a standardized format for accessibility.
- ❖ Identify suitable locations, plan guided tours, and design activities highlighting the ecological significance of Chettinad's native trees.
- ❖ Create designs for interpretative signage, incorporate relevant information about native trees, and collaborate with local artists for production.
- ❖ Develop a dedicated webpage featuring details about native trees, project progress, ecotourism offerings, and interactive elements for engagement.

Duration of the MoU: 03.11.2022 to 02.11.2025

Photographs of the MoU



Outcomes of the MoU

During the initial phase of the Achireum and Alagappa University collaboration project, students engaged in comprehensive research, learning, and data collection focused on specific native trees in the Chettinad region. This phase, guided by Dr. SP. Mathiraj, Professor and Head, Department of Tourism & Hotel Management and Dr. S. Sridevi, Teaching Assistant, laid the foundation for a deeper understanding of the local environment. This framework sets the stage for an enriching phase 2, where students will apply their knowledge to contribute meaningfully to the promotion of Chettinad's native trees through sustainable ecotourism initiatives.

Summary of the Memorandum of Understanding (MoU) between the Department of Bioinformatics at Alagappa University, India, and the National Synchrotron Radiation Research Center in Hsinchu, Taiwan

Objective of the MoU

The main objective of this Memorandum of Understanding (MoU) is to establish a framework for mutually beneficial collaboration between NSRRC and ALU. The initial collaboration will specifically target the exchange of expertise to complement the protein crystallography programs at both institutes. This collaboration will encompass the exchange of knowledge in design, technical consultation, scientific consultation, research activities, as well as personnel training in the fields of protein structure and functional studies.

- Exchange of materials for education and research, including publications and academic information.
- Exchange of faculty members and research scholars.
- Exchange of students for the pursuit of degree/PG Dip/Ph.D. programs.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Prof. J. Jeyakanthan delivered an invited talk at the 2nd Joint International Symposium of NSRRC - Establishment of Structural Biology Network in Asia and Oceania held in Taiwan between 6th and 7th December 2017.
- Three students, Ms. Amala, Ms. Saritha, and Mr. Guru Raj Rao, visited NSRCC, Taiwan, as part of the DST-NDO-TAIWAN Research Collaboration in 2019.
- Dr. Chun-Jung Chen delivered talks at the International Conference (ICSBCADD) conducted by the Department of Bioinformatics, Alagappa University, in consecutive years 2019 and 2022.

Duration of the MoU: 2014-2020 and 2022-2027(12 years)

Photographs of the MoU



Prof. J. Jeyakanthan delivered an invited talk at the 2nd Joint International Symposium of NSRRC. Additionally, three Ph.D. scholars were exchanged from Alagappa University to NSRRC to conduct their research work.

Outcomes of the MoU

In this context, several fruitful results were obtained and published in highly reputable journals. Based on this, the following publications were produced as part of the MoU.

1. Saravanan, S. T., Poopandi, S., Huang, Y. C., Mathimaran, A., Jeyaraman, J., & Chen, C. J. (2023). Purification, crystallization, and X-ray diffraction analysis of succinyl-diaminopimelate desuccinylase from *Wolbachia* endosymbiont of *Brugiamalayi*. *Journal of the Chinese Chemical Society*.
2. Karthika, A., Hemavathy, N., Amala, M., Rajamanikandan, S., Veerapandian, M., Prabhu, D., & Jeyakanthan, J. (2023). Structural and functional characterization of 6-phosphogluconate dehydrogenase in *Plasmodium falciparum* (3D7) and identification of its potent inhibitors. *Journal of Biomolecular Structure and Dynamics*, 1-17.
3. Javali, S. P., Jeyakanthan, J., Chen, C. J., & Arumugam, M. (2023). An integrated bioinformatics approach to identify candidate biomarkers and the evaluation of drugs for pheochromocytoma. *bioRxiv*, 2023-02.
4. Alikhajeh J, Khajeh K, Ranjbar B, Naderi-Manesh H, Lin YH, Liu E, Guan HH, Hsieh YC, Chuankhayan P, Huang YC, Jeyaraman J, Liu MY, Chen CJ. Structure of *Bacillus amyloliquefaciens* alpha-amylase at high resolution: implications for thermal stability. *Acta Crystallogr Sect F Struct Biol Cryst Commun*. 2010 Feb 1;66(Pt 2):121-9. doi: 10.1107/S1744309109051938.
5. Guan HH, Goh KS, Davamani F, Wu PL, Huang YW, Jeyakanthan J, Wu WG, Chen CJ. Structures of two elapid snake venom metalloproteases with distinct activities highlight the disulfide patterns in the D domain of ADAMalysin family proteins. *J Struct Biol*. 2010 Mar;169(3):294-303. doi: 10.1016/j.jsb.2009.11.009.
6. Chiang YL, Hsieh YC, Fang JY, Liu EH, Huang YC, Chuankhayan P, Jeyakanthan J, Liu MY, Chan SI, Chen CJ. Crystal structure of Adenylylsulfate reductase from *Desulfovibrio gigas* suggests a potential self-regulation mechanism involving the C terminus of the beta-subunit. *J Bacteriol*. 2009 Dec;191(24):7597-608. doi: 10.1128/JB.00583-09.
7. Chiang YL, Hsieh YC, Fang JY, Liu EH, Huang YC, Chuankhayan P, Jeyakanthan J, Liu MY, Chan SI, Chen CJ. Crystal structure of Adenylylsulfate reductase from *Desulfovibrio gigas* suggests a potential self-regulation mechanism involving the C terminus of the beta-subunit. *J Bacteriol*. 2009 Dec;191(24):7597-608. doi: 10.1128/JB.00583-09.
8. Chen LC, Huang SC, Chuankhayan P, Chen CD, Huang YC, Jeyakanthan J, Pang HF, Men LC, Chen YC, Wang YK, Liu MY, Wu TK, Chen CJ. Purification, crystallization and preliminary X-ray crystallographic analysis of xylose reductase from *Candida tropicalis*. *Acta Crystallogr Sect F Struct Biol Cryst Commun*. 2009 Apr 1;65(Pt 4):419-21. doi: 10.1107/S1744309109008719. Epub 2009 Mar 26. PMID: 19342796; PMCID: PMC2664776.

Summary on the MoU signed between Department of Bioinformatics, Alagappa University & Orbito Asia Diagnostics, Coimbatore

Objective of the MoU

The main aim of this MoU agreement is to encourage mutual benefit of forging formal linkage to develop new collaborative teaching, hands-on training and research programs in the pioneering areas of Bioinformatics and Life-sciences. Now, therefore, in consideration of the premises and mutual covenants hereinafter contained, the parties here to agree as follows:

- Joint Research & Development, projects in the areas of Bioinformatics, Life-Sciences and other areas of basic medical and allied Sciences research to be funded by external funding agencies.
- Graduate, Postgraduate and Doctoral Research Project work/ Internship/Summer Project to be carried out at both ALU and OAD.
- Organizing and participating in Joint Symposia/Conferences/Workshops/Short-term Refresher courses conducted by both the organizations.
- Short term and long-term developmental programs on topics of mutual interest.
- Extending pre-clinical toxicology and pharmacokinetics / clinical and trial facilities / trials for bio-products developed by ALU at OAD.
- Exchange of materials to carry out research work in basic medical, Bioinformatics and Life-Sciences sector.
- Exchange of faculty for guest lectures as well as for examinerships and
- Extending access to library and knowledge sharing facilities mutually for both students and faculty in both the institutions.

Activities of the MoU Undertaken

The following activities were initiated after the signing of the MoU agreement:

- The MoU has signed and the research is focusing on developing innovative research and therapeutic drug development strategies in Biotechnology and Bioinformatics.
- Organizing academic conferences, workshops, and seminars, where scholars from both institutes can present their research findings and exchange ideas.

Duration of the MoU: 2022-2027 (5 years)

Outcomes of the MoU

In this context, several fruitful results were obtained and published in highly reputed journals. Based on this, the following publications were made as a part of the MoU.

1. Nathar, S., Rajmichael, R., Jeyaraj Pandian, C., Nagarajan, H., Mathimaran, A., Kingsley, J. D., & Jeyaraman, J. (2024). Exploring Nocardia's ecological spectrum and novel therapeutic frontiers through whole-genome sequencing: unraveling drug resistance and virulence factors. Archives of microbiology, 206(2), 76. <https://doi.org/10.1007/s00203-023-03799-z>

2. Prajisha Jayaprakash, Jayashree Biswal, Chitra Jeyaraj Pandian, Kingsley, J., & Jeyaraman Jeyakanthan. (2023). Investigation of translation initiation factor through protein–protein interactions and molecular dynamics approaches. *Molecular Simulation*, 49(11), 1104–1116. <https://doi.org/10.1080/08927022.2023.2217936>

Summary on the MoU signed between Department of Bioinformatics, Alagappa University & Sree Balaji Medical College and Hospital-Biher

Objective of the MoU

The major goal of this Memorandum of Understanding (MoU) is to promote mutual benefits through a formal collaboration focused on developing innovative teaching and research initiatives in the cutting-edge fields of Biotechnology and Bioinformatics. In alignment with the stated objectives and mutual commitments, the parties involved commit to fostering research efforts aimed at producing significant outcomes, including patents and publications in well-regarded journals indexed by Scopus.

- Fostering Joint Research and Development projects in the areas of Biotechnology, Bioinformatics, Structural Biology, and other fields related to basic medical and allied sciences.
- Conducting Graduate, Postgraduate, and Doctoral Research Project work/Internship/Summer Project at both ALU and SBMCH.
- Organizing and participating in Joint Symposia, Conferences, Workshops, and Short-term Refresher courses conducted collaboratively by both organizations.
- Undertaking joint projects in pre-clinical toxicology and pharmacokinetics, extending clinical trial facilities for joint studies, and conducting joint trials related to bio-products developed by ALU at SBMCH.
- Extending access to the library and knowledge-sharing facilities mutually for the benefit of both students and faculty in SBMCH and ALU.

Activities of the MoU Undertaken

The following activities were initiated after the signing of the MoU agreement:

- Organizing academic conferences, workshops, and seminars where scholars from both universities can present their research findings and exchange ideas.
- In November 2021, Prof. J. Jeyakanthan of Alagappa University visited SBMCH and delivered a lecture on "Recent Developments and Successful Generation of Research Grants in Biomedical Informatics."

Duration of the MoU: 2022-2027 (5 Years)

Photographs of the MoU



Prof. J. Jeyakanthan visited SBMCH in November 2021 and delivered a lecture on "Recent Developments and Successful Generation of Research Grants in Biomedical Informatics."

Outcomes of the MoU

In this context, numerous valuable results were obtained and subsequently published in highly reputable journals. As a part of the MoU, the following publications were produced.

1. Sureshan, M., Rajamanikandan, S., Srimari, S. et al. Designing specific inhibitors against dihydrofolate reductase of *W. bancrofti* towards drug discovery for lymphatic filariasis. *Struct Chem* 33, 935–947 (2022). <https://doi.org/10.1007/s11224-022-01896-1>
2. Ramachandran, B., Jeyarajpandian, C., Jeyaseelan, J.M. *et al.* Quercetin-induced apoptosis in HepG2 cells and identification of quercetin derivatives as potent inhibitors for Caspase-3 through computational methods. *Struct Chem* 33, 1867–1893 (2022). <https://doi.org/10.1007/s11224-022-01933-z>
3. Vijayakumar, S., Vaseeharan, B., Sudhakaran, R. *et al.* Bioinspired Zinc Oxide Nanoparticles Using *Lycopersicon esculentum* for Antimicrobial and Anticancer Applications. *J Clust Sci* 30, 1465–1479 (2019). <https://doi.org/10.1007/s10876-019-01590-z>
4. Vinita, N.M., Devan, U., Durgadevi, S. et al. Triphenylphosphonium conjugated gold nanotriangles impact Pi3K/AKT pathway in breast cancer cells: a photodynamic therapy approach. *Sci Rep* 13, 2230 (2023). <https://doi.org/10.1038/s41598-023-28678-x>
5. Sindhu T, Rajamanikandan S, Jeyakanthan J, Pal D. Investigation of protein-ligand binding motions through protein conformational morphing and clustering of cytochrome bc1-aa3 super complex. *J Mol Graph Model*. 2023 Jan; 118:108347. doi: 10.1016/j.jmgm.2022.108347.

Summary on the MoU signed between Department of Social Work, Alagappa University, & Tamil Nadu ADI DRAVIDAR Housing and Development Corporation (TAHDCO) No,31,2nd Land, Cenotaph Road, Teynampet, Chennai-600 018

Objective of the MoU

The main aim of this MoU agreement is to assets support to the TAHCO activities such as identifying the needy candidates, motivating the beneficiaries and having continuous follow up to improve the life of the SC/ST people through the field work activities such as

- To conduct a Techno/Economic Survey among beneficiaries of TAHDCO loan services of the past five years.
- To collect feedback of the beneficiaries on loan services of TAHDCO
- To identifying the aspiring SC/ST people for entrepreneurship in their respective districts.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- The MSW Students conducted Techno/Economic Survey among beneficiaries of TAHDCO loan services of the past five years.
- The MSW Students collect the feedback of the beneficiaries on loan services of TAHDCO
- The MSW Students met the beneficiaries of loan services of TAHDCO scheme and documented for future reference.

Duration of the MoU: 11-02-2023 to 19-03-2023

Photographs of the MoU



Outcomes of the MoU

Both the department through the MoU assisted support to TAHDCO activity such as

- Identifying the needy candidates
- Motivating the beneficiaries of TAHDCO loan services.
- Continuous follow to improve the life of SC/ST people through field work activity.

Summary on the MoU signed between Department of Social Work, Alagappa University, & Sivagangai Multipurpose Social Service Society (SMSSS), Paramakudi

Objective of the MoU

The main aim of this MoU agreement is to understand the Rural Social System, Strategies used by the Non-Governmental Agencies, Nature of Government Intervention for the development of poor people, and to facilitate student experiences of group living through such as:

- To understand the community social system.
- To facilitate students learning about the ground realities of community living.
- To help students develop personal and professional skills and to facilitate development in processes like decision-making, planning, organizing, executing, coordinating and report writing.
- To assist the students, learn to work together as a team with positive approach and to encourage them to take on concrete task towards future from the camp.
- To enable students, understand the Socio-Economic and Cultural conditions of rural life and to help students integrate essential values for life.
- To conduct a study on the socio-economic status of the people at Pamban.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- organized Rural Camp on “Community Social Work at coastal area” in Pamban, Ramanathapuram district.
- various awareness campaigns were organized to sensitize the people coastal area in pamban on the issues and challenges faced by fisherman community.
- 130 saplings were planted at St. Anne’s Matriculation Hr. Sec.School.
- Participatory rural appraisal techniques, focused group discussion and rally conducted among the community people.
- A survey was conducted to identify the socio – economic status of the community people.
- Student organized various culture program to spread awareness on various issues and challenges of coastal area.

Duration of the MoU: 10-12.2022 to 18.12.2023

Photographs of the MoU



Outcomes of the MoU

The Rural Camp brought out the following outcomes to the participants and the students of MSW: -

- Students of MSW were able to excel in professional skills such as leadership, communication, team work, organization, coordination, cooperation, rapport building, reporting and so on.
- Students of MSW were able to learn how to interact with the people and collect data from them as they were provided a golden opportunity to conduct a survey on socio-economic status of the people at pamban.
- School students got awareness on tree plantation, good touch, and bad touch.
- Students of MSW got benefitted from various resource persons who presided over various seminars during the camp.
- Students of MSW applied social work methods into practice.

Summary on the MoU signed between Department of Social Work, Alagappa University & BHEL, Thirumayam

Objective of the MoU

The main aim of this MoU agreement is to sensitize the university student about vigilance awareness week – 2022 through

- Conducting competition to university students and students of affiliated colleges on the topics to related to corruption.
- To take up the pledge on vigilance awareness
- To observe vigilance awareness week at Alagappa University by conducting seminar.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- English and Tamil essay writing competition was conducted to the university students and students of affiliated colleges
- English and Tamil elocution competition was conducted to the university students and students of affiliated colleges
- A pledge on vigilance awareness was taken among the students and staffs of the university. Prizes were distributed to the prize winners.
- A special lecture was given by the officials of BHEL Thirumayam and honourable vice chancellor to the students and staffs of the Alagappa University.

Duration of the MoU: 04-11-2022 to 08-11-2022

Photographs of the MoU



Outcomes of the MoU

- Through the special lecture the student community got awareness on the ill effects of corruption.
- Various competitions were conducted and prizes were distributed to the winners.
- The staffs and students of Alagappa University took the pledge on vigilance awareness week to create corruption free nation.

Summary on the MoU signed between Department of International Business, Alagappa University, India & Dahnay Logistics Pvt Ltd, Chennai

Objective of the MoU

The main aim of this MoU agreement is to promote practical internship to students by introducing the EXIM procedures and documentation and making them employable before they graduate and to provide placement assistance to students. The Department recognize the value of cooperative assistance from the company that integrate theory and practice and promote campus placements. Both the department and company agree to encourage the following activities case by case such as

- Providing Summer Internship to students
- Collaborating the department in conduct of seminars and conferences
- Placement Opportunities provided to the outgoing students
- Conduct of department level placement drive

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Mr. P. Babu Rao, HR Manager, Dahnay Logistics Pvt Ltd, Chennai

Duration of the MoU: 2022-2024 (3 years)

Photographs of the MoU



Outcomes of MoU

1. Assisted the department in providing internships to the students introducing them to EXIM procedures and documentation, trained them in auditing the cargo handling of goods.
2. The company CEO disseminated his practical experience in the seminar conducted by the department.
3. The company has provided placement to top performing students.

Summary on the MoU signed between Department of International Business, Alagappa University, India & Regional Institute of International Trade, Chennai

Objective of the MoU

The main aim of this MoU agreement is to promote practical internship to students by introducing the EXIM procedures and documentation and making them employable before they graduate and to provide placement assistance to students. The Department recognize the value of cooperative assistance from the company that integrate theory and practice and promote campus placements. Both the department and company agree to encourage the following activities case by case such as

- Providing Summer Internship to students
- Collaborating the department in conduct of seminars and conferences
- Placement Opportunities provided to the outgoing students
- Conduct of department level placement drive

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Mr. P. Babu Rao, HR Manager, Dahmay Logistics Pvt Ltd, Chennai

Duration of the MoU: 2022-2024 (3 years)

Photographs of the MoU



Outcomes of MoU

1. Assisted the department in providing internships to the students introducing them to EXIM procedures and documentation, trained them in auditing the cargo handling of goods.
2. The company CEO disseminated his practical experience in the seminar conducted by the department.
3. The company has provided placement to top performing students.

Summary on the MoU/Linkage Signed between Department of Banking Management, Alagappa University, and Indian Bank

Objective of the MoU/Linkage

The Department of Banking Management offers an MBA (Banking and Insurance) program to train students who aspire to a banking career. The main intention of the program is to nurture the students in the domain of banking by providing a theoretical as well as practical basis for the students to readily occupy the pivotal position in banking and other financial services. As a part of the curriculum, the students undergo 45 days of practical training in banks. All the students are deputed to various branches of Indian Bank with the approval of the corporate office and zonal office of the bank.

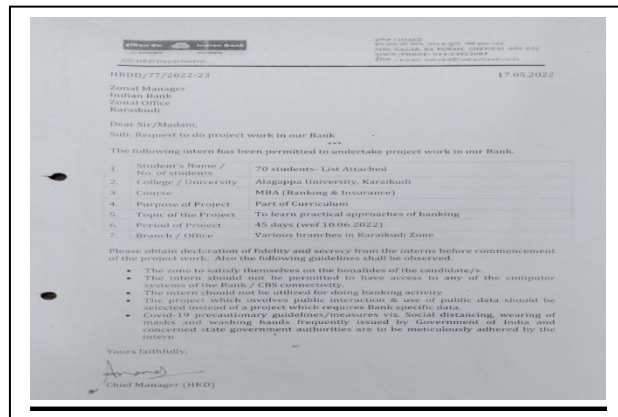
Activities of the MoU/Linkage Undertaken

1. Forty-five days of practical training for students.
2. The bankers help the students experience the practicality of banking.
3. As trainees, the students acquire knowledge as well as marketing skill

Duration of the MoU/Linkage: April,2022(45 Days)

Photographs: (1) Students with officials from India Post Payments Bank

(2) Communication received from Indian Bank



Outcomes of the MoU/Linkage:

Practical knowledge gained by the students via training at Indian Bank also helped the students get placement in a very reputed organization like Bank of Celyon, IDFC First Bank, DBS, Karur Vysya Bank, Dreamland Eximania, Aditya Birla Capital, I Process, Sorce HOV Indian Private Limited, Infosys and CSB Bank,

Collaborative research work between Toyota Technological Institute, Japan and Department of Energy Science, Alagappa University, Karaikudi

Visitor: Hiroki Nagata, Toyota Technological Institute, Japan

Host: Department of Energy Science, Alagappa University, Karaikudi, India

Duration: August 1st, 2022 to October 31st, 2022

Objective:

The visit aimed to foster research collaboration in the field of renewable energy, with a focus on solar energy technologies. It provided an opportunity for knowledge exchange and the development of new research methodologies.

- To engage in cutting-edge research on renewable energy technologies.
- To foster a collaborative research environment between Toyota Technological Institute, Japan and Department of Energy Science, Alagappa University, Karaikudi.
- To gain hands-on experience in advanced energy research methodologies.

Activities:

- Engaged in joint research projects focusing on the enhancement of development of low-cost solar cell.
- Conducted seminars on the latest solar energy technologies and discussed the research findings.
- Hands-on research in Energy Science, Alagappa University, Karaikudi laboratories, focusing on solar energy experiments and data analysis.
- Worked along with faculty, research scholars and students of Department of Energy Science, Alagappa University on joint research initiatives.

Photographs of the Collaboration



Outcomes:

- Advanced research in solar energy technologies, contributing to the academic and scientific community's understanding of renewable energy solutions.
- Strengthened international collaboration between Toyota Technological Institute, Japan, and Department of Energy Science, Alagappa University, India.
- Established strong connection between Toyota Technological Institute, Japan, and Department of Energy Science, Alagappa University, India for future research projects and student exchange programs in the field of Energy Science.

Summary on the MoU signed between Department of Microbiology, Alagappa University, India; Kyungpook National University, Deagu, Republic of Korea

Objective of the MoU

The main aim of this MoU agreement is to encourage voluntary interaction and cooperation and to promote friendship between the two departments for their mutual benefit. Both departments recognize the value of cooperative educational experiences that integrate theory and practice and promote campus internationalization.

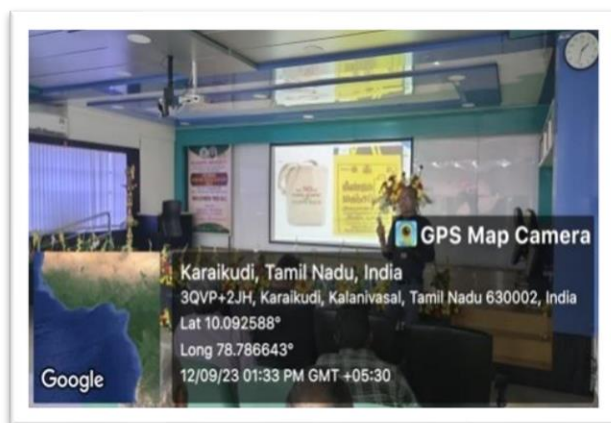
Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Dr. M. Govarthanam from Kyungpook National University, South Korea felicitated the function and motivated the scholars to do research which have to address the public issues.
- In International Symposium on Bioplastics-ISB 2023, Prof. M. Govarthanam explained about the impacts of microplastics in environment and human health.

Duration of the MoU: 2023-2026 (3 years)

Photographs of the MoU:



Outcomes of the MoU

In this context, several fruitful results were obtained and several the results were published in highly reputed journals. Based on this, the following publications were made as a part of the MoU.

1. K. Mohanrasu, R. Guru Raj Rao, G.H. Dinesh, [Kunyu Zhang](#), Sudhakar Muniyasamy, A. Pugazhendhi, J. Jeyakanthan, Kumar Ponnuchamy, M. Govarthanam, **A. Arun**. 2021. Production and Characterization of biodegradable Polyhydroxybutyrate by *Micrococcus luteus* isolated from marine

- environment. International Journal of Biological Macromolecules. DOI: <https://doi.org/10.1016/j.ijbiomac.2021.07.029>(**IF 6.953**)
2. Boobalan Thulasinathan, G. Veerappan, Pandiaraj Manickam, Ponnuchamy Kumar, Muthusamy Govarthan, C. Sekar, **Arun Alagarsamy**. 2023. Simultaneous electrochemical determination of persistent petrogenic organic pollutants based on AgNPs synthesized using carbon dots derived from mushroom. Science of the Total Environment. Volume 884, 1 August 2023, 163729. **DOI:** <https://doi.org/10.1016/j.scitotenv.2023.163729>. (**IF. 10.754**).
 3. T. Angelin Swetha, V. Ananthi, Abhispa Bora, Nallathambi Sengottuvelan, Kumar Ponnuchamy, Govarthan Muthusamy, A. Arun. 2023. A review on biodegradable polylactic acid (PLA) production from fermentative food waste - its applications and degradation. International Journal of Biological Macromolecules. Volume 234, 15 April 2023, 123703. (IF- 8.025) <https://doi.org/10.1016/j.ijbiomac.2023.123703>.
 4. T. Angelin Swetha, Abhispa Bora, K. Mohanrasu, P. Balaji, Rathinam Raja, Kumar Ponnuchamy, Govarthan Muthusamy, A. Arun. 2023. A Comprehensive review on Polylactic Acid (PLA) – Synthesis, Processing and Application in Food Packaging. International Journal of Biological Macromolecules. Volume 234, 15 April 2023, 123715 (Accepted Ref. No. BIOMAC_123715) (IF- 8.025) <https://doi.org/10.1016/j.ijbiomac.2023.123715>.
 5. T. Angelin Swetha, K. Mohanrasu, Muniyasamy Sudhakar, Rathinam Raja, Kumar Ponnuchamy, Govarthan Muthusamy, A. Arun.2022. A comprehensive review on techniques used in conversion of biomass into bioeconomy. Sustainable Energy Technologies and Assessments. Volume 53, Part C, 102682, ISSN 2213-1388, <https://doi.org/10.1016/j.seta.2022.102682> ,12.11.22. (IF- 7.632).
 6. Anandhi, V., Ramesh, U., Balaji, P., Kumar, P., Muthusamy Govarthan., Arun, A., 2022. A Review on the Impact of Various Factors on Biohydrogen Production. International Journal of Hydrogen Energy. <https://doi.org/10.1016/j.ijhydene.2022.08.046>. (IF 7.139).
 7. Boobalan, T., Tamilmani, J., Arumugam, N., Mohan Rasu, K., Kim, W., Kumar, P., Govarthan, M., Arun, A., 2022. Wastewater substrates in microbial fuel cell systems for carbon-neutral bioelectricity generation: An Overview. Fuel. Volume 317, 1 June 2022, 123369. DOI: <https://doi.org/10.1016/j.fuel.2022.123369>. (IF 8.035).
 8. Maya, M.R., Ananthi, V., Arun, A., Kumar, P., Govarthan, M., Rameshkumar, R., Veeramanikandan, V., Balaji, P., 2022. Protective efficacy of Capsicum frutescens fruits in pancreatic, hepatic and renal cell injury and their attenuation of oxidative stress in diabetic rats. Journal of Taibah University for Science (TUSC). 15:1, 1232-1243, DOI: <https://doi.org/10.1080/16583655.2021.2024998>. (IF 2.688).
 9. Mohanrasu, K., Guru, R.R., Dinesh, G.H., Zhang, K., Sudhakar, M., Pugazhendhi, A., Jeyakanthan, J., Kumar, P., Govarthan, M., Arun, A., 2021. Production and Characterization of biodegradable Polyhydroxybutyrate by Micrococcus luteus isolated from marine environment. International Journal of Biological Macromolecules. DOI: <https://doi.org/10.1016/j.ijbiomac.2021.07.029> (IF – 8.025).
 10. Premnath, N, Mohanrasu, K., Guru Raj Rao, R., Dinesh, G.H., Siva Prakash, G., Ananthi, V., Kumar, P., Govarthan, M., Arun, A., 2021. A Crucial Review on Polycyclic Aromatic Hydrocarbons - Environmental Occurrence and Strategies for Microbial Degradation. Chemosphere. DOI: [10.1016/j.chemosphere.2021.130608](https://doi.org/10.1016/j.chemosphere.2021.130608) (IF – 8.943).

Summary on the MoU signed between Department of Microbiology, Office of Industry and Consultancy & University Business Collaboration centre, Alagappa University, India; M/S. Theevanam Additives & Nutraceuticals Pvt Lts, IITM Research Park, Chennai

Objective of the MoU

The main aim of this MoU agreement is to encourage voluntary interaction and cooperation and to promote friendship between the two departments for their mutual benefit. Both departments recognize the value of cooperative educational experiences that integrate theory and practice and promote campus internationalization.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

One-day National level Symposium on IPR and Industry - Institutional –MSME collaborations was jointly Organized by Industry and Consultancy, University Business Collaboration Centre (UBCC), Alagappa University Institutional Innovation Council (AUIIC), Of Alagappa University, Karaikudi, Tamil Nadu, Ministry of Micro, Small and Medium Enterprises (MSME), Govt. of India on 10.04.2023 at the Science Campus, Seminar Hall, Alagappa University, Karaikudi.

Duration of the MoU: 2023-2026 (3 years)

Photographs of the MoU



Summary on the MoU signed between Department of Microbiology, Office of Industry and Consultancy & University Business Collaboration centre, Alagappa University, India; M/S. Biogar Bio BEE stores Private Limited, Ticel, Coimbatore

Objective of the MoU

The main aim of this MoU agreement is to encourage voluntary interaction and cooperation and to promote friendship between the two departments for their mutual benefit. Both departments recognize the value of cooperative educational experiences that integrate theory and practice and promote campus internationalization.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- One-day National level Symposium on IPR and Industry - Institutional –MSME collaborations was jointly Organized by Industry and Consultancy, University Business Collaboration Centre (UBCC), Alagappa University Institutional Innovation Council (AUIIC), Of Alagappa University, Karaikudi, Tamil Nadu, Ministry of Micro, Small and Medium Enterprises (MSME), Govt. of India on 10.04.2023 at the Science Campus, Seminar Hall, Alagappa University, Karaikudi.

Duration of the MoU: 2023-2026 (3 years)

Photographs of the MoU:



Summary on the MoU signed between Department of Tourism and Hotel Management, Alagappa University and Saram International FZE, United Arab Emirates

Objective of the MoU

The primary objective is to equip students with essential skills and knowledge required for successful job interviews, ultimately aiding in their placement in reputed organizations. The Institute conducted specialized training sessions on interview techniques, resume building, and soft skills development for students. Mock interviews and personalized feedback sessions were organized to simulate real-world interview scenarios. SARAM collaborated with our department to identify job opportunities and facilitate the placement process.

- ❖ Provided necessary infrastructure and facilities for the training sessions.
- ❖ Promoted and encouraged student participation in the training programs.
- ❖ Facilitated communication between students, the Institute, and potential employers.
- ❖ Designed and delivered comprehensive interview training modules.
- ❖ Provided experienced trainers and industry experts for interactive sessions.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- ❖ Collaborated with the department's placement cell to understand the specific needs of students.
- ❖ Regular progress reviews and feedback sessions were conducted to assess the effectiveness of the training programs.
- ❖ The Department and SARAM collaborated to make necessary adjustments for continuous improvement.

Duration of the MoU: 01.02.2023 to 31.01.2025

Photographs of the MoU



Outcomes of the MoU

Overall, the collaboration has created a synergistic approach, aligning the efforts of our department and SARAM to produce well-prepared and skilled individuals who are more likely to succeed in job interviews and secure placements in reputed organizations. The ongoing monitoring and collaborative improvements ensure that the program remains dynamic and responsive to the evolving needs of students and the job market.

Summary on the MoU signed between Department of Bioinformatics, Alagappa University & Karpagam Academy of Higher Education, Coimbatore

Objective of the MoU

The primary objective of this Memorandum of Understanding (MoU) is to foster mutual benefits through a formal collaboration aimed at developing innovative teaching and research initiatives in the cutting-edge fields of Biotechnology and Bioinformatics. Aligned with the stated objectives and mutual commitments, the involved parties commit to promoting research efforts aimed at yielding significant outcomes, including patents and publications in well-regarded journals indexed by Scopus.

- Joint Research and Development projects in the areas of Biotechnology, Bioinformatics, Structural Biology, and other fields related to basic medical and allied sciences.
- Conducting Graduate, Postgraduate, and Doctoral Research Project work/Internship/Summer Project at both KAHE and ALU.
- Organizing and participating in Joint Symposia, Conferences, Workshops, and Short-term Refresher courses conducted collaboratively by both organizations.
- Implementing short-term and long-term developmental programs on topics of mutual interest.
- Facilitating the exchange of faculty for guest lectures as well as for examinerships.
- Extending pre-clinical toxicology and pharmacokinetics, providing clinical trial facilities for joint studies undertaking, and conducting joint trials related to bio-products developed by ALU at KAHE.
- Extending access to the library and knowledge-sharing facilities mutually for the benefit of both students and faculty in both institutions.

Activities of the MoU Undertaken

The following activities were initiated after the signing of the MoU agreement:

- Organizing academic conferences, workshops, and seminars where scholars from both universities can present their research findings and exchange ideas.
- The MoU has been recently signed, and the research is focused on developing innovative research and therapeutic drug development strategies in Biotechnology and Bioinformatics.
- Dr. Prabhu and Dr. Rajamanikandan visited Alagappa University to discuss future research projects and development.

Duration of the MoU: 2023-2028 (5 years)

Photographs of the MoU



The MoU was signed between Alagappa University and Karpagam Academy of Higher Education, and Senior Prof. J. Jeyakanthan, Head of the Department of Bioinformatics, visited KAHE.

Outcomes of the MoU

1. Karthika A, Hemavathy N, Amala M, Rajamanikandan S, Veerapandian M, Prabhu D, Vetrivel U, Jung Chen C, Jeyaraj Pandian C, Jeyakanthan J. Structural and functional characterization of 6-phosphogluconate dehydrogenase in *Plasmodium falciparum* (3D7) and identification of its potent inhibitors. *J Biomol Struct Dyn.* 2024 Feb-Mar;42(4):2058-2074. doi: 10.1080/07391102.2023.2248271.
2. Sindhu T, Rajamanikandan S, Jeyakanthan J, Pal D. Pharmacophore, atom-based 3D-QSAR modeling and binding mode analysis of QcrB inhibitors as potential tuberculosis agents. *Research Square*; 2023. DOI: 10.21203/rs.3.rs-2903522/v1.

Summary on the MoU signed between Department of Nanoscience and Technology, Alagappa University and Indian Institute Technology -Madras

Objective of the MoU

The main aim of this MoU agreement is to encourage voluntary interaction and cooperation and to promote friendship between the two departments for their mutual benefit. Both departments recognize the value of cooperative educational experiences that integrate theory and practice and promote campus internationalization. Both the departments agree to encourage the following activities case by case such as

- Start a new course in area of nanoelectronics/ semiconductor devices/ nanophotonics/ nanofabrication
- Start a new program in area of nanoelectronics/ semiconductor devices/ nanophotonics/ nanofabrication
- Submit a proposal to funding agencies
- Conduct a research project at IITM under INUP- i2i program
- Internship program at IITM under INUP- i2i program
- Avail the usage of Centre for NEMS and Nanophotonics (CNNP) by Ph.D. / Master's students
- Agrees to provide access to facilities from small institutes
- SHORT/ MEDIUM TERM projects at CNNP, IITM

1. Activities of the MoU Undertaken

Summary on the Familiarization and Hands on training Workshop held at IIT MADRAS under Indian Nano electronics Users Program – Idea to Innovation (inupi2i)

The Familiarization Workshop of inupi2i was held at IIT Madras from 12/06/2023 to 14/06/2023. This workshop was conducted to give an insight to the participants about the facilities available in IIT Madras and which are under inupi2i. They also showed us the researches going on at IIT Madras. The Hands-on Training was held at IIT Madras under inupi2i for 10 days (10/07/2023 – 19/07/2023). The workshop's theme was Fabrication of silicon and Perovskite solar cells. The aim of inupi2i is to provide research facility for students who are interested in doing research in certain field. So, this workshop was held to reach research scholars in different colleges who are interested to work mainly in solar cells to provide knowledge about its fabrication techniques and to know about the facilities under inupi2i for fabricating and characterizing the solar cells. The students after attending this workshop will be,

- Encouraged to use the facility provided by the IIT MADRAS under inupi2i Scheme.
- Supported by IIT MADRAS and will be allowed to work on their proposed work for a given time.
- Encouraged to Participate in HACKATHON held by the same.

Activities Undergone in Workshop

The following activities were accomplished in the Familiarization and Hands on Training Programme:

- Dr. Shanti Bhattacharya, professor, Electrical engineering Department gave the welcome address for both familiarization and hands on training workshop.
- Aparna and Neha, Project scientists gave an insight about inupi2i and about the facilities available in IIT Madras.
- The scholars and the professors gave lectures during the familiarization workshop and during hands on training they explained about the instruments and fabrication techniques and during second half they took us to the lab and practically explained the techniques.
- During Hands on Training, they practically showed how the characterization instruments are operated and the techniques to fabricate a solar cell device.

Duration of the Familiarization Workshop: 12/06/2023 – 14/06/2023 (3 days)

Photographs of the Familiarization Workshop:



Duration of the Hands-on Training Workshop: 10/07/2023 – 19/07/2023 (10 Days)

Outcomes of the Hands-on Training

- From Familiarization workshop we got an insight about the characterization and fabrication techniques for Iot devices and energy conversion devices.
- They talked about the principle and mechanism behind the devices and what are the characterisation techniques available there and how it is used to analyse them.
- From Hands on Training, we learnt how to fabricate Silicon and Perovskite solar cells. We got an experience to visit the labs in electrical engineering department.
- They thought us during first half about the fabrication techniques and the characterization techniques so we got an insight about why these characterizations are used to analyse the fabricated devices. And also, they step by step explained about the fabrication techniques to us this helped us to know about the fabrication and characterisation clearly it even helped us to know about the facilities available in II Madras.

Photographs of the Hands-on Training Workshop:



Summary on the MoU Signed between Department of Animal Health and Management, Alagappa University, India and Faculty of Science, Mahidol University, Thailand

Objective of the MoU

The main aim of this MoU agreement is to encourage voluntary interaction and cooperation and to promote friendship between the two departments for their mutual benefit. Both departments recognize the value of cooperative educational experiences that integrate theory and practice and promote campus internationalization. Both the departments agree to encourage the following activities case by case such as

- Exchange of materials in education and research, publications and academic information.
- To enhance the relationship between the faculties and universities.
- To develop the academic and cultural interchange in the areas of education and other activities.

Activities of the MoU Undertaken

The following activities were undertaken after the MoU agreement signed:

- Faculty and students from both university departments have jointly published their research and findings in reputed journals.

Duration of the MoU: 2023-2028 (5 years)

Outcomes of the MoU

Based on this MOU, Exchanging the research, publications and academic information between the faculties and universities and good number of publications (enclosed).

Summary on the MoU/Linkage Signed between Department of Banking Management, Alagappa University, with Indian Bank and India Post Payments Bank

Objective of the MoU/Linkage

As a part of the MBA (B&I) programme, every student has to undergo practical training (summer Internship) in a bank branch for a period of 45 days. All the students are deputed to various branches of Indian Bank and India Post Payment Bank.

Activities of the MoU/Linkage Undertaken

1. Forty-five days of practical training for students at post payments bank and Indian bank
2. The students gained knowledge about the functioning of post- payments bank and the customer services offered by post payments bank
3. The students were trained in various banking and marketing activities at the bank.

Duration of the MoU/Linkage: April, 2022(45 Days)

Photographs: (1) Training at India Post Payments Banks (2) Training Certificate received from the branch manager, Indian Bank



(1)



(2)

Outcomes of the MoU/Linkage:

Practical knowledge gained by the students via training in Indian Bank and post payments bank also helped the students to get placement in a very reputed organization like-Bank of Celyon, Karur Vysya Bank, Ranstad, Muthoot Finance Ltd., CSB Bank, BELSTAR MICROFINANCE LIMITED, IDFC First Bank, Chola Business Services Limited, HDB Financial services Ltd, Axis Bank, Shriram Finance and Kotak Mahindra Bank.