

**ARAP WITH IMRE RESEARCH AREA: MATERIALS SCIENCE AND ENGINEERING**

#	A*STAR Researcher	Designation	Email Address	Research Area
1	Ady Suwardi	Scientist, Deputy Head / Adjunct Assistant Professor	ady_suwardi@imre.a-star.edu.sg	Energy Harvesting Device using 3D printing. Thermoelectrics convert heat to electricity and vice versa. Owing to this ability, it can be used to harvest waste heat, or cooling. The major bottleneck hindering widespread commercial viability of thermoelectrics lies in its device fabrication process, which often involve intricate structures. In this project, we will explore the use of 3D printing to print thermoelectric devices with intricate shape and sizes. In addition, scalability and automation will also be looked into. Machine learning can be further incorporated to maximize the learning from the generated experimental data.
2	Chen-Gang Wang	Scientist	wang_chen_gang@imre.a-star.edu.sg	My research group focuses on exploring design, synthesis, and development of novel polymeric materials to provide practical solutions to environmental problems. We leverage our expertise in organic and polymer chemistry to create, control, and examine architectural macromolecules with tailored molecular weights, morphologies, and functions. We would like to collaborate with groups which are interested in, but not limited to, polymer synthesis, soft materials, sustainability, molecular simulation, and material engineering.
3	Dan Kai	Scientist	kaid@imre.a-star.edu.sg	My lab focus in the areas of biomass valorization and function materials. I would like to collaborate with groups which are interested developing advanced functional materials from lignocellulosic biomass or natural polymers.
4	Goh Simin Shermin	Scientist	gohsms@imre.a-star.edu.sg	The research in my laboratory focuses on functional and dynamic cross-linked polymers. We are interested in developing reprocessable thermosets, with stimuli-responsive dynamic bonds, as recyclable functional materials. Current research activities focus on developing these materials for sensors and sustainability. We welcome collaboration with groups who are interested in exploring these materials for your applications, or in developing novel recyclable materials together.
5	Goh Simin Shermin	Scientist	gohsms@imre.a-star.edu.sg	The research in my group focuses on electrochemical chemosensors, in particular, non-enzymatic sensors for redox inactive species. We aim to discover new porous materials as binding species and study their sensing performance. I would like to collaborate with groups who have expertise in porous liquids and frameworks.

6	Jackie Y. Ying	Senior Fellow and Director, NanoBio Lab	jyying@imre.a-star.edu.sg	My research is interdisciplinary in nature, with a theme in the synthesis of advanced nanostructured materials for biological, medical, catalytic and energy applications. My laboratory has been responsible for several novel wet-chemical and physical vapor synthesis approaches that create nanocomposites, nanoporous materials and nanodevices with unique size-dependent characteristics. These new systems are designed for applications ranging from battery and fuel cells, immunotherapy and targeted delivery of drugs, cell culture substrates and biomaterials, in vitro toxicology and drug screening, pharmaceuticals and chemicals synthesis, agritechology, to biosensors and diagnostics.
7	Jason Lim	Scientist	jason_lim@imre.a-star.edu.sg	This project will integrate porous metal organic frameworks with biocompatible polymers to form a new class of hybrid thermogelling materials for biomedical applications.
8	Jinghua Teng	Principal Scientist	jh-teng@imre.a-star.edu.sg	I would like to collaborate with groups that are interested at 2D optoelectronics, 2D Photonics, nano-photonics, THz technology, plasmonics and metamaterials.
9	Junhua KONG	Scientist	kongjh@imre.a-star.edu.sg	The research in my laboratory focuses on (1) polymers and polymer composites, functional additives, nanostructures, and flame retardant materials, and (2) functional polymers and polymer-derived materials for emerging applications including energy, catalyst, etc. We would like to collaborate with research groups which have expertise in above areas and are interested in conducting fundamental research activities on these areas.
10	Kuan Eng Johnson Goh	Principal Scientist	gohj@imre.a-star.edu.sg	Lab focus: Quantum Materials development Interest to collaborate: Development of high quality 2D and bulk quantum materials, characterization methods, heterogenous interfaces, transport understanding in such materials.
11	Li XU	Senior Scientist	x-li@imre.a-star.edu.sg	At IMRE, I have been leading a research team dedicated to developing polymeric materials for various applications, particularly bioimaging & diagnostics & controlled drug release, energy generation/storage and food packaging. The main research focuses of my team include 1) design and synthesis of high performance polymer materials and nanostructured inorganic materials, 2) preparation of hybrid polymeric materials, 3) conversion of hybrid polymeric materials into hybrid carbonaceous materials and 4) structure-property relationship study for biomedical application, energy generation/storage and food packaging. I would like to collaborate with groups which have expertise in bioimaging & diagnostics & chemotherapy, energy generation/storage and food science & technology.
12	Lim Yee Fun	Senior Scientist	limyf@imre.a-star.edu.sg	catalyst synthesis and characterization, decarbonization technology, and materials chemistry.
13	Liu Huajun	Scientist	liu_huajun@imre.a-star.edu.sg	My group focuses on materials synthesis and characterization of oxide thin films for functional electronic devices. I would like to collaborate with groups that are interested in radio frequency acoustic filters for 5G/6G wireless communications, synaptic electronics for neuromorphic computing, synchrotron X-ray in-situ scattering and spectroscopy, oxide thin film growth, ferroelectric and piezoelectric thin films, piezoelectric force microscopy, atomic scale imaging of oxide thin films by transmission electron microscopy.
14	Liu Songlin	Senior Scientist	liusl@imre.a-star.edu.sg	I would like to collaborate with Dr. Sam Lau's group at Edinburgh University to develop high-performance composite membranes for carbon separation and capture.

15	Loh Xian Jun	Executive Director	lohxj@imre.a-star.edu.sg	<p>Biodegradable Thermogelling Polymers: Working Towards Clinical Applications</p> <p>As society ages, aging medical problems such as organ damage or failure among senior citizens increases, raising the demand for organ repair technologies. Synthetic materials have been developed and applied in various parts of human body to meet the biomedical needs. Hydrogels, in particular, have found extensive applications as wound healing, drug delivery and controlled release, and scaffold materials in the human body. The development of the next generation of soft hydrogel biomaterials focuses on facile synthetic methods, efficacy of treatment, and tunable multi-functionalities for applications. Supramolecular 3D entities are highly attractive materials for biomedical application. They are assembled by modules via various non-covalent bonds (hydrogen bonds, <math>\pi</math>-<math>\pi</math> stacking and/or van der Waals interactions). Biodegradable thermogels are a class of such supramolecular assembled materials. Their use as soft biomaterials and their related applications are of interest.</p>
16	Loh Xian Jun	Executive Director	lohxj@imre.a-star.edu.sg	<p>Anti-vascular endothelial growth factors (anti-VEGF) have become the most common treatment modality for many retinal diseases. These include neovascular age-related macular degeneration (n-AMD), proliferative diabetic retinopathy (PDR) and retinal vein occlusions (RVO). However, these drugs are administered via intravitreal injections that are associated with sight-threatening complications. The most feared of these complications is endophthalmitis, a severe infection of the eye with extremely poor visual outcomes. Patients with retinal diseases typically have to undergo multiple injections before achieving the desired therapeutic effect. Each injection incurs the risk of the sight-threatening complications. As such, there has been great interest in developing sustained delivery platforms for anti-VEGF agents to the posterior segment of the eye. In recent years, there have been various strategies that have been conceptualised. We plan to develop nano-formulations and hydrogels for this purpose. For this work, the barriers of drug delivery to the posterior segment of the eye will be studied. The characteristics of an ideal sustained delivery platform will then be harnessed and used in the design of the delivery platforms.</p>
17	Pei Wang	Scientist	wangp@imre.a-star.edu.sg	<p>My research focused on materials development for metal AM. I'd like to collaborate with groups interested in metal AM and metal alloy characterization.</p>
18	Tedrick Thomas Salim Lew	Scientist / Adjunct Assistant Professor	tedrick_thomas@imre.a-star.edu.sg	<p>My research group focuses on engineering nanotechnology-enabled platforms to improve the resilience of agriculture in the changing climate. We strive to develop nanosensors to monitor plant metabolites in real time for (a) revealing physiological insights into plant stress responses and (b) enabling communication of plant health status with growers. With these research goals in mind, we would like to collaborate with groups who have expertise in plant biology, biotechnology, materials science or chemical engineering.</p>
19	Teo Ee Jin	Senior Scientist	teoej@imre.a-star.edu.sg	<p>The research in my lab focuses on developing highly efficient fluorescent structures for robust, sustainable optical wireless communications. I would like to collaborate with groups with interest or expertise in optical wireless communications.</p>
20	Wang Xizu	Senior Scientist	wangxz@imre.a-star.edu.sg	<p>My lab focus on new optical electronics, thermal electronics, flexible electronics material and printable process for nanodevice fabrication.</p>
21	Warintorn Thitsartarn	Senior Scientist	thitsartarnw@imre.a-star.edu.sg	<p>The research in my laboratory focuses on developing new composite materials to create new function of polymer composite such as mechanical strength, compatibility, conductivity, thermal resistivity etc.</p>
22	Wei Fengxia	Scientist	wei_fengxia@imre.a-star.edu.sg	<p>Currently I have two research focus area: the hybrid functional materials development and advanced characterizations for metal alloys. I would like to collaborate with groups which are interested in (1) novel functional materials such as perovskite, metal organic frameworks, etc and (2) mechanistic study on structural metal alloys.</p>

23	Wei Fengxia	Scientist	wei_fengxia@imre.a-star.edu.sg	I mainly focus on two areas: (1) hybrid functional materials (2) advanced characterizations for metal alloys. The work involves extensive crystallography. I would like to collaborate with groups which are interested in (1) development of functional materials, such as perovskites, MOFs etc and (2) mechanistic studies on metal alloys.
24	Yao Kui	Principal Scientist	k-yao@imre.a-star.edu.sg	Nano-structured ferroics and device functional mechanisms Nanoferroics, including ferroelectric, ferroelastic, ferromagnetic and multiferroic nanostructured materials, possess a variety of extraordinary behaviors that make them extremely attractive for multi-functional device applications. Currently the project is focusing on exploration of nano-structured ferroelectrics for realization of new functional mechanisms and/or outstanding piezo-smart related performance. The ferroelectric materials' functions and properties are tailored by manipulating their composition, nanostructure, stress, and geometry. (As an example, refer to our recent publication in Science (369, 292–297, 2020).) For students with strong engineering background and interests, they are encouraged to further demonstrate advanced piezo-MEMS and NEMS (micro- and nano-electromechanical systems) devices using the obtained high performance nano-ferroelectrics. The research in my laboratory focuses on design, growth, and characterization of ferroelectric and piezoelectric materials. I would like to collaborate with groups which have expertise on theoretical analyses including first principles.
25	Zhang Zheng	Senior Scientist	zhangz@imre.a-star.edu.sg	The research in my laboratory focuses on cold spray deposition of a variety metallic powders including Al6061, Ti64, Inconel 718, CoNiCrAlY, etc. I would like to collaborate with groups which are interested in cold spray and have expertise in cold spray additive manufacturing.
26	Zhao Meng	Scientist	zhaom@nus.edu.sg	My research interests mainly focus on the development of advanced materials (2D materials for instance) and their applications in optoelectronics, sensing, memory devices etc. I would like to collaborate with groups which share the same interest, or have complementary expertise, for example, electronic structure or optics simulation.
27	Zheng Xinting	Scientist	zhengxt@imre.a-star.edu.sg	The research in my lab focuses on the development of nanomaterials for sensor applications. I would like to collaborate with groups which are interested in nanomaterial synthesis, sensor development, or artificial intelligence enhanced analysis of sensor data.
28	Zhengtao Xu	Principal Scientist	<a href="mailto:Zhengtao@imre.a-star.edu.sg">Zhengtao@imre.a-star.edu.sg</a>	Sulfur-equipped MOF solids for solar cell and battery applications
29	Zhengtao Xu	Principal Scientist	<a href="mailto:Zhengtao@imre.a-star.edu.sg">Zhengtao@imre.a-star.edu.sg</a>	Metalation of MOF solids for electrocatalysis and asymmetric catalysis
30	Zhengtao Xu	Principal Scientist	<a href="mailto:Zhengtao@imre.a-star.edu.sg">Zhengtao@imre.a-star.edu.sg</a>	Crystalline carbon frameworks for single-atom catalysis and sustainable development
31	Zhengtao Xu	Principal Scientist	<a href="mailto:Zhengtao@imre.a-star.edu.sg">Zhengtao@imre.a-star.edu.sg</a>	Metalation of MOF solids for electrocatalysis and asymmetric catalysis
32	Zhengtao Xu	Principal Scientist	<a href="mailto:Zhengtao@imre.a-star.edu.sg">Zhengtao@imre.a-star.edu.sg</a>	Crystalline carbon frameworks for single-atom catalysis and sustainable development