

INTRODUCTION

Materials Synthesis and Characterization Laboratory (MSCL) was established on 1 November 1999 and formerly known as Advanced Materials Research Center (AMRC). In line with university restructuring, its name was changed to Advanced Materials and Nanotechnology Laboratory in 2006. Recent restructuring in 2012 has seen AMNL evolving again to become (MSCL) to be in tune with advanced materials and nanotechnology research niche. This laboratory is one of the three research laboratories under the Institute of Advanced Technology (ITMA).

OBJECTIVES

- To be a leading research center in advanced materials and nanotechnology.
- To develop a world class research laboratory specializing on synthesis and characterization of advanced materials and nanomaterials.
- To disseminate knowledge and innovative technologies through publication, seminars and conferences.

RESEARCH PROGRAMS

Nanomaterials

This program focuses on the synthesis and characterization of nanomaterials and their building blocks which involves the use of nanosized materials. The study of these materials covers the fundamental aspects towards their potential application. The research on nanocomposite materials and nanostructured materials includes but is not limited to nanometals, nanoalloys, nanoceramics, carbon nanotubes and layered double hydroxides.

Functional and Structural Materials

This program focuses on synthesis and characterization of advanced functional materials and also structural materials. The study of these materials covers on the field of advanced materials such as electronic materials, magnetic and superconducting materials, dielectric ceramic materials, semiconducting materials, photonic materials, thin film materials and smart materials. Secondly it also focuses on polymer nano composites materials, nano structural metallic alloys.

RESEARCH AND SUPPORT FACILITIES

- Field Emission Scanning Electron Microscope (FESEM)
- Energy Dispersive X-Ray Spectroscopy (EDX)
- Raman Spectroscopy
- X-Ray Diffractometer (XRD)
- Thermogravimetric Analyzer (TGA/DSC)
- Fourier Transform Infra-red (FTIR)
- UV-Visible Spectrophotometer (UV-Vis)
- Atomic Absorption Spectroscopy (AAS)
- Chemical Vapour Deposition (CVD)
- High Temperature Furnace
- High Shear Homogenizer
- High Frequency Probe Sonicator
- PCB Fabrication Machine
- Surface Area Analyzer (BET)
- Gas Chromatography (GC)
- High Performance Liquid Chromatography (HPLC)
- Nano Sizer
- Hysteresis Graph System
- Optical Microscope
- Wire Bonder
- Universal Testing Machine (UTM)
- High Energy Ball Mill

Name	Email	Expertise
Assoc. Prof. Dr. Khamirul Amin Matori	khamirul@upm.edu.my	Materials Science, Glass and Glass Ceramics
Prof. Dr. Mohd. Zobir Hussein	mzobir@upm.edu.my	Materials Chemistry, Nanomaterials
Prof. Dr. Zulkarnain Zainal	zulkar@upm.edu.my	Materials Chemistry, Photocatalysis, Semiconductor Electrochemistry
Assoc. Prof. Dr. Mansor Hashim	mansor_upm@upm.edu.my	Magnetic and Super Conducting Materials
Assoc. Prof. Dr. Halim Abdullah	halim@upm.edu.my	Catalysis
Prof. Dr. Azmi Zakaria	azmizak@upm.edu.my	Applied Optics-Photothermal Physic, Photothermal Spectroscopy, Solar Energy, Material Science
Assoc. Prof. Dr. Jumiah Hassan	jumiah@upm.edu.my	Dielectric Science and Advanced Materials such as Titanates and Composites
Dr. Raba'ah Syahidah Azis	rabaah@upm.edu.my	Magnetic Materials
Assoc. Prof. Dr. Chen Soo Kien	chensk@upm.edu.my	Superconducting Materials
Prof. Dr. Hj. Sidek Hj. Ab Aziz	sidek@upm.edu.my	Semiconductor Devices
Dr. Che Azurahaman Che Abdullah	azurahaman@upm.edu.my	Biology, Engineering, Physics
Assoc. Prof. Dr. Irmawati Ramlil	irmawati@upm.edu.my	Heterogeneous Catalysis
Dr. Md Shuhazly Mamat@ Mat Nazir	shuhazly@upm.edu.my	Nanomaterials
Dr. Ismayadi Ismail	ismayadi@upm.edu.my	Magnetic Materials, Nanomaterials

ACADEMIC REQUIREMENTS

FOR ADMISSION

PhD Program

- Bachelor Degree in Science or Engineering with minimum CGPA 3.75
- Master Degree in Science or Engineering (with thesis) or without thesis with minimum CGPA 3.25

COURSEWORK CREDIT REQUIREMENT

<ul style="list-style-type: none">• Master Degree with Thesis (full research)• Master Degree in Science or Engineering (with thesis and coursework) with CGPA ≥ 3.50• Master Degree (without thesis) with CGPA ≥ 3.75• Bachelor with CGPA ≥ 3.75 (First Class Upper)	Not Required
<ul style="list-style-type: none">• Master Degree in Science or Engineering (with thesis and coursework) with CGPA > 3.50• Master Degree (without thesis) with CGPA > 3.50	6 – 12 Credits

Master with Thesis Program

- Bachelor Degree in Science or Engineering with CGPA of at least 2.50 (Second Class Lower); or
- Bachelor Degree in Science or Engineering with CGPA < 2.50 and of at least three (3) years working experience in relevant field.

COURSEWORK CREDIT REQUIREMENT

<ul style="list-style-type: none">• Bachelor Degree in Science or Engineering with CGPA 3.25	Not Required
<ul style="list-style-type: none">• Master Degree in Science or Engineering (with thesis and coursework) with CGPA > 3.50• Master Degree (without thesis) with CGPA > 3.50	6 – 12 Credits

Please apply online via www.sgs.upm.edu.my and send your application and supporting documents to the address below :

Dean
School of Graduate Studies
Universiti Putra Malaysia
Zone 4, Off Jalan Stadium
43400 UPM Serdang,
Selangor

INSTITUTE OF ADVANCED TECHNOLOGY

ITMA



MATERIAL SYNTHESIS AND CHARACTERIZATION LABORATORY



Head of Laboratory
itma_kmscl@upm.edu.my

CONTACT US

Director
Institute of Advanced Technology
Universiti Putra Malaysia
43400 UPM Serdang,
Selangor Darul Ehsan
Tel : 03-8946 7533
Fax : 03-8946 7006



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