



**VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY
INSTITUTE OF MATERIALS SCIENCE**

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Main Facilities



HR-TEM System



FE-SEM System



X-ray Diffractometer



Raman Spectrometer



High Resolution
Photoluminescence System



Physical Properties
Measurement System

Characterization Equipment

- HR TEM (JEM 2100, Jeol)
- FE-SEM (Hitachi S-4800)
- X-ray Diffractometer (Equinox 5000)
- Raman Microscope (XploRA Plus, Horiba)
- Scanning Probe Microscopy
- Spectroscopic Ellipsometry (UVISEL Plus, Horiba)
- HR Photoluminescence System (iHR 500, Jobin Yvon)
- Physical Properties Measurement System (PPMS 6000)
- Equipment for Metals And Polymer Characterization
- Full Set of Equipment for Materials Failure Analysis
- Light Source Parameters Measuring System (Everfine YT1000)
- Vector Network Analyzer (R&S ZNB20)



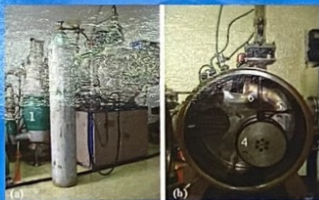
Cleaning Room



Box Coating System



Photolithography System



Melt Spinning Equipment



Hot Isostatic Presser



Thermal CVD system

Equipment for Materials Preparation

- Cleaning Room ~100 m², class 1000 (YR: class 1000)
- Box Coating System (Univex 400, Leybold)
- Photolithography System (Model 800, OAI)
- Laser Ablation Deposition (Meca 2000),
- Equipment for Nano-powder Fabrication
- Melt Spinning Equipment
- Spray Pyrolysis Equipment (Holmarc)
- Thermal CV, MP-CVD, LP-CVD,
- Equipment for Fabrication of Hard Magnetic Materials
- Equipment for Powder Metallurgy including Hot Isostatic Presser & Spark Plasma Sintering
- Equipment for Mineral Processing and Hydrometallurgy
- DC-Plasma Equipment
- Sputtering Equipment



Institute of Materials Science

Institute of Materials Science (IMS) the biggest institute in Vietnam Academy of Science & Technology - VAST) was established in 1993 by the Vietnamese Government. Currently, IMS has 177 permanent staff and 44 contracted researchers; including 02 Full Professors, 12 Principal Researchers (the highest level), 11 Associate Professors, 49 Senior Researchers, 84 PhDs, 72 M.Sc., 49 BSc and Eng.

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|--------------------------|------------------------------------|-------------------------|
| * Director: | Assoc. Prof. Dr. Doan Dinh Phuong | phuongdd@ims.vast.ac.vn |
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| * Chair of Sci. Council: | Prof. Dr. Nguyen Quang Liem | liemnq@ims.vast.ac.vn |

Directorate Board

Functions and Tasks

- * Basic research on materials science & technology
- * Develop and transfer technologies in the fields of advanced materials to industry
- * Post-graduate education and training

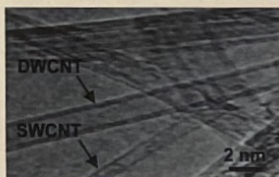


Awarding First-rank Labor Medal to IMS

Research and Development Areas

- * Hydrogen Energy Technology
- * Optical, Optoelectronic, Photonic Materials & Devices
- * Electronic, Magnetic Materials & Devices
- * Sensor Devices and Application
- * Metals, Alloys and Special Metallic Materials
- * Catalyst and Photocatalysis Materials
- * Composite Materials & Polymers
- * Bio-medical- and Eco-Materials
- * Renewable Energy Materials & Devices
- * Anti-corrosion, Protection, Failure Analysis of Materials
- * Mineral Processing & Environmental Technologies
- * Lighting Technology

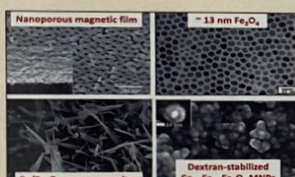
Products developed by IMS:



Carbon Nanotube Material



CdTe/CdS Quantum dots



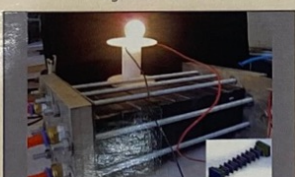
Magnetic Materials



Toxic and Combustible Gas Monitoring System



XRF Equipment for Material Composition Analysis



PEM Fuel cell



High Performance Tungsten Carbide



Fireproof Paint Technology



On-site Failure Analysis

Education and Training

- * IMS is responsible for PhD & MSc. programs of Faculty of Materials & Energy Science (Graduate University of Science & Technology - VAST).
- * Joint/Sandwich PhD Education with overseas academic institutions.
- * Training courses for Acad. & Industrial Institutions (topics related to R&D fields)



PhD degree conferring ceremony at IMS



Joint Seminar with JWRI (Osaka University)

International Cooperation

Establishing collaboration research, academic exchange activities & joint technique services with overseas partners.

- * **France:** CNRS; CEA; Uni. Paris-Saclay; Paris VI, VII ...; **Germany:** LIKAT Rostock; FBH-Berlin...; **Russia:** Institutions of Russian Academy of Science...; **Belarus:** Institutes of NASB; Belarusian State Uni...; other European partners from **Poland; Czech Republic; Slovakia; Italy; Belgium; UK; Bulgaria; Netherland; Denmark...**
- * **Japan:** NIMS, NAIST, Osaka Uni., Tohoku Uni., JFE Research Lab...; **Korea:** KIMS, KIST, KITECH, KRISS, KAIST, KIMM...; Universities (Chungnam, Chungbuk, Hanyang, Kyung Hee, Myongji...); **Taiwan:** ITRI, **Australia:** RMIT.
- * **Singapore:** NTU; **Thailand:** TISTR, SLRI, NANOTEC, MTEC, Suranaree Uni. of Tech. (SUT); other ASEAN partners from: **Malaysia; Philippines; Laos, Myanmar,** and other partners from **India; US...**
- * IMS is a Focal Point of Vietnam in Sub-committee on Materials Science & Technology (belonged to ASEAN Committee on Science & Technology – ASEAN COST).



Signing MoU with NIMS (Japan)



Signing MoU with KIMS (Korea)



International Workshop on Advanced Materials Science & Nanotechnology 2021

Organizer of Scientific Conferences

- * International Workshop on Advanced Materials Science & Nanotechnology - IWAMSN (biannual event)
- * Co-organizer of the conferences: International Conference on Photonic & Application (ICPA); National Conference on Solid State Physics & Materials Science (SPMS); National Conference on Optics & Spectroscopy
- * Joint Seminars with Overseas Research Institutions and Universities.

Outcomes and Achievements

- * 140 papers in high reputation SCI and SCIE international journals and 10 granted patents per year
- * Turnover from industries: 1.6 billion USD per year
- * 7-10 PhDs per year
- * Laureate of Ho Chi Minh Prize and State Prize on Science & Technology; Many International and National Awards on Science & Technology



Signing Ceremony of Technology Transfer Agreement



Vietnamese Vice President awarding the First-rank Independent Medal to IMS Founding Director Prof. Acad. Nguyen Van Hieu



Receiving the Prime Minister's Certificate of Merit

Organization

IMS structure: 23 Research Laboratories; 04 R&D Centers; 01 Key Laboratory for Electronic Materials; Zone for Technology Development; Department of General Administration.

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| <ul style="list-style-type: none"> * Department of General Administration * Key Lab. for Electronic Materials & Devices * Cooperman Lab. (Lab. of Lighting Technology) * Lab. of Semiconductor Laser * Lab. of Plasma Technology * Lab. of Electron Microscopy * Lab. of Materials & Engineering of Optical Fibers * Lab. of Photoelectrochemistry | <ul style="list-style-type: none"> * Lab. of Applied Spectroscopy & Gemology * Lab. of Optoelectronic Materials * Lab. of Magnetism & Superconductivity * Lab. of Analytical Equipment & Method Development * Lab. of Energy Materials & Devices * Lab. of Biomedical Nanomaterials * Lab. of Carbon Nanomaterials * Lab. of Gas Sensors & Monitors | <ul style="list-style-type: none"> * Lab. of Advanced Metallic Materials * Lab. of Metal Engineering * Lab. of Materials Corrosion and Protection * Lab. of Inorganic Materials * Lab. of Chemistry & Catalytic Materials * Lab. of Materials Research and Application * Lab. of Polymer & Composite Materials | <ul style="list-style-type: none"> * Lab. of Mineral Processing * Lab. of Nanotechnology * Center of Materials Failure Analysis * Center of Environmental Materials & Technology * Center of Advanced Biomedical Materials * Center of Technology Development and Application * Tuu Liet Technology Development Zone |
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