Center for Advanced Materials & Devices (CAMD)

BML MUNJAL UNIVERSITY™

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About CAMD

One of the objectives of BML Munjal University (BMU) is to support inter or cross-disciplinary research in the university. In line with the vision of BMU, CAMD was created with the aim to provide basic and advanced research facilities to carry out translational research in different areas of science, engineering and technology including computational areas.

The CAMD enables faculty and researchers to work on cutting edge technologies and to keep pace with the developments taking place globally. The facility is encouraged to be used by postgraduate, doctoral and postdoctoral researchers and also the faculty members from all the departments/schools.

It is equipped with several scientific instruments that are available in some of the renowned universities/ IITs/ Institutes in India. The center is broadly classified into three research facilities:

- **Thin-films and Measurement Lab**
- **Material Characterization Lab**
- **Device Fabrication Lab**

Thin films and measurement lab includes some advanced physical papor deposition systems (sputtering, electron-beam-evaporation, cathodic-arc) and plasma enhanced chemical vapor deposition for thin films and surface engineering research.

Material characterization lab has some sophisticated equipment such as X-ray diffraction, scanning electron microscope, an Integrated system having atomic force microscope, scanning near optical microscope and Raman spectroscopy for advanced materials characterization.

Device and fabrication lab includes the instruments such as the glove box and laser pattern generator system.

Broad Research Areas

✓Large Area Flexible Electronics

Carbon, Amorphous & Organic Materials

✓Energy storage

Supercapacitors, Lithium-Ion Batteries

✓Energy Harvesting

Amorphous silicon solar-cell, Perovskite Solar Cell

✓Surface Engineering

Tribological & Hard coatings, Optical coatings

✓Nanomaterials for Photo-catalysis

Water Remediation & Purification

✓Artificial Intelligence

Finding New Materials, Neuromorphic Devices

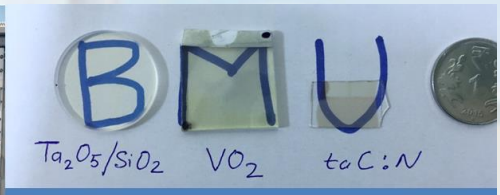
Ongoing and completed projects

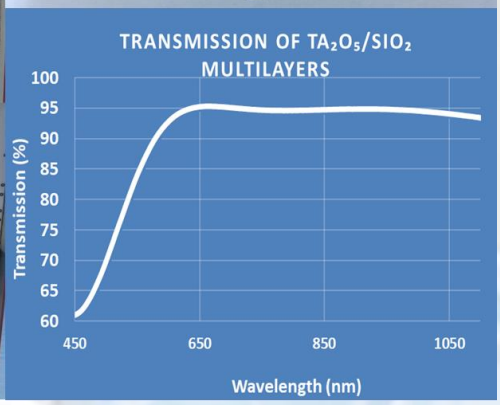
- ✓ Investigations of structure and properties of H bonded unsymmetrical n-type Organic semiconductors, *sponsored by Department of Science & Technology (DST)*
- ✓ Design, development and implementation of a course on Thin film Technology and Surface Engineering for Human Resource Development and Research with a focus on sensors and applications for Automobile industry, *sponsored by Royal Academy of Engineering (UK)*
- ✓ Development of Thermal Diffusion Barrier coatings for Cam chain Pins, *sponsored by Rockman Industries*
- ✓ Low Dimensional Functional Materials for Energy Storage Applications, *sponsored by BML Munjal University (BMU) under Seed Grant*
- ✓ Assessment of Mechanical and Structural Properties of High - performance Polymer Blends for Automotive, Structural and Transmission Applications, *sponsored by BMU under Seed Grant*

Research Highlights

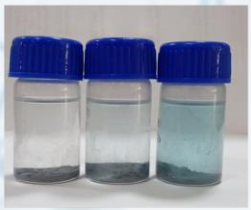
Hard & Wear Resistant Coatings

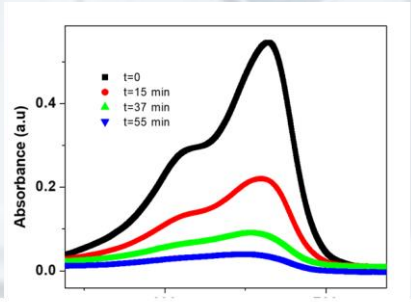
Transparent Electronics & Optical Coatings

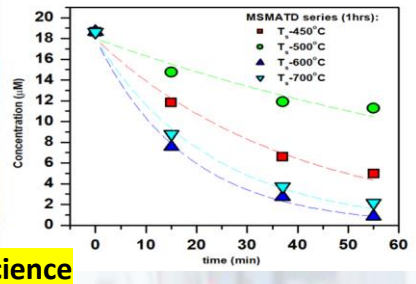




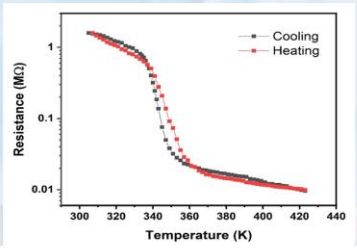
Materials for Water Remediation & Purification

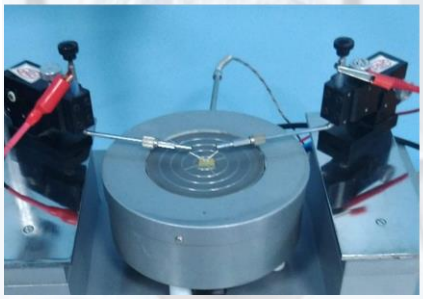


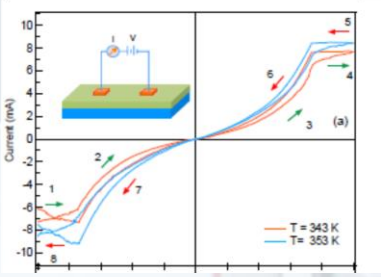




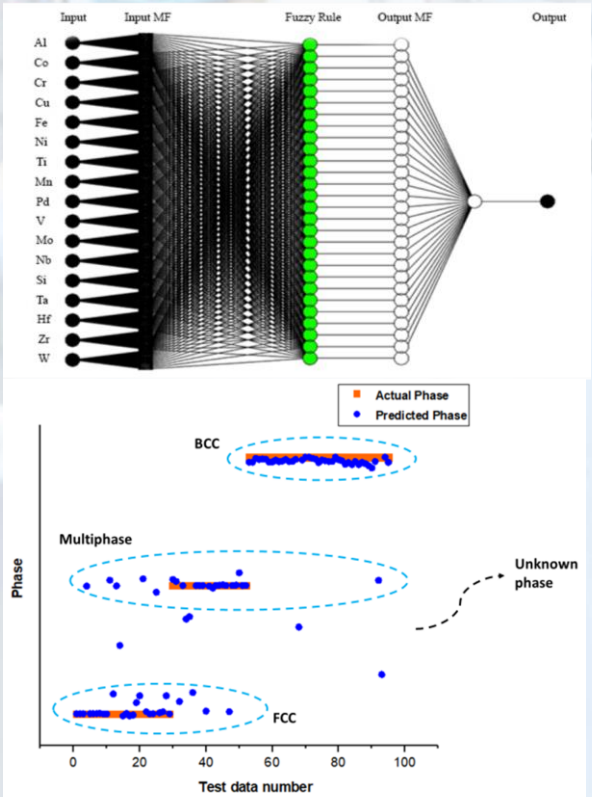
Materials for Sensors & Neuromorphic Devices



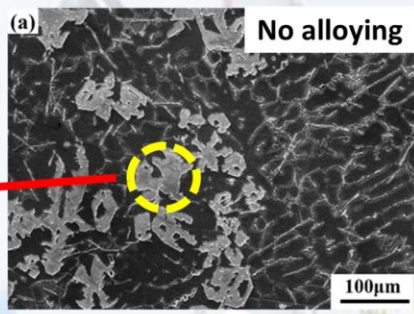


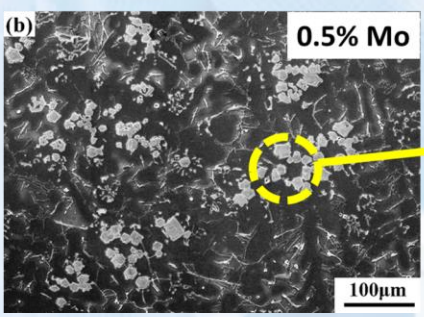


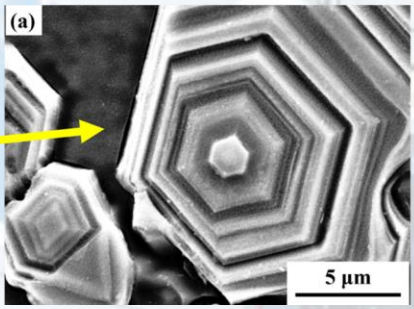
AI for Materials Science



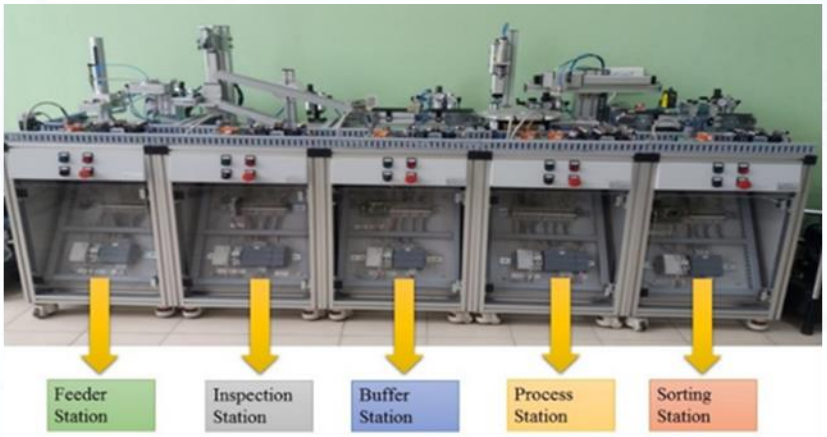
Aluminium Alloy Processing & Recycling







Siemens Advanced Center for Robotics & Automation (ARM)



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About Siemens Advanced Center for Robotics & Automation

The objective of Siemens advanced center for Robotics & Automation is to develop/enhance the technical skills and competence of the trainees (Engg. Grad./Under Grad., and Industry people) which leads them to enlarge their area of employment and career in the field of modern industry. The centre is equipped with several scientific instruments and broadly classified into eight facilities:

(1) Product Design and Validation Lab

(2) Robotics Lab

(3) Pneumatics and Hydraulics Lab

(4) CNC Lab

(5) Mechatronics Lab

(6) Process Instruments Lab

(7) Automation Lab

(8) Electrical Lab

The Center is equipped with the latest PLM software solutions from Siemens, such as NX™ software for digital product design and engineering, Teamcenter® software for digital lifecycle management and the Tecnomatix® portfolio for digital manufacturing. They also feature state-of-the-art industrial automation equipment from Siemens, as well as the latest computer numerical controllers (CNC), programmable logic controllers (PLC), and a dedicated lab involving three heavy duty industrial robots and robot cells from the Industry Giant Kuka Robotics Ltd. All the software's are integrated with the Siemens Total Integrated Automation (TIA) portal.