

ENGINEERING MATERIALS AND STRUCTURE (EMAST)

- Prof. Ir. Dr. Saiful Amri Mazlan Professor, Head of IkoHza
- Ts. Dr. Nur Azmah Nordin, Senior Lecturer
- Ts. Dr. Nurhazimah Nazmi, Senior Lecturer
- Ts. Dr. Norhasnidawani Johari, Senior Lecturer
- Dr. Syahir Yasin Bin Mohd Yusuf, Senior Lecturer
- Dr. Hafizal Bin Yahaya, Senior Lecturer

NUMBER OF STUDENTS

- Ph.D : 31 students
- Master: 19 students
- Bachelor: 7 students

RESEARCH KEYWORDS

- Magnetorheological
- Coating
- Nanomaterials
- Composite
- Machine Learning
- Thin Film
- Artificial Intelligence
- 3D Printing

OUTLINE OF IKOHZA

In EMAST i-kohza, the nano- or microstructures of various functional materials and devices are characterized quantitatively and the formation processes are analyzed based on materials science and engineering. Novel processes for improved materials and devices are then proposed and developed.

CURRENT RESEARCH

RESEARCH1: UTM-TDR GRANT

Rheological and Resistivity of a Novel Magnetorheological Elastomer for future Force-Sensing Applications (Total: RM 240,000)



RESEARCH 2: PRGS MOHE GRANT SCHEME

Prototype of Semi-Active MRE Engine Mounting for Automotive Application (Total: RM 168,000)



RESEARCH 3: CRG UTM GRANT

Field Dependent Properties of Smart Grease for Controlling Ankle Foot Orthosis (Total: RM 100,000)



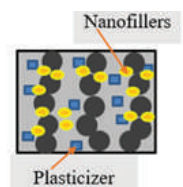
RESEARCH 4: UTM-PR GRANT

Prototype Semi-Active Magnetorheological Elastomer Bushing for Automotive Application (Total: RM 80,000)



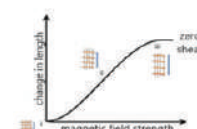
RESEARCH 5: PDRU UTM GRANT

Magnetorheological Elastomer Properties with the Addition of Plasticizer and Nano Additive for Force Sensor Application (Total: RM 138,460)



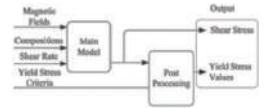
RESEARCH 6: JICA GRANT

Magnetostrictive of Magnetorheological Foam for Soft Force Sensor Technology (Total: RM 180,000)



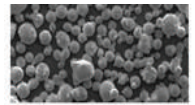
RESEARCH 7: FRGS MOHE GRANT SCHEME

A field-dependent rheological model of magnetorheological grease with different types of oils using machine learning approach for future assistive device in rehabilitation (Total: RM 122,400)



RESEARCH 8: INDUSTRIAL GRANT

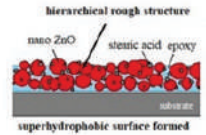
Enhanced Properties of Additively Manufactured AlSi10Mg via Nanostructuring through Severe Plastic Deformation for Lightweight Automotive Applications (Total RM 117,000)



SEM micrograph of AlSi10Mg

RESEARCH 9: UTM ENCOURAGEMENT RESEARCH

Development of self-healing nanocoating for anticorrosion (Total: RM 30,000)



MERIT OF THE TECHNOLOGY

1) AUTOMOTIVE



Bushing



Damper

2) BUILDING, BRIDGE



Isolator

3) BIOMEDICAL



Foot orthosis

POSSIBLE INDUSTRY APPLICATION

- Smart material development
- Evaluation of material performance

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