



## Research Group Profile

# Materials Research & Consultancy Group (MRCG)

### ABOUT US:

Materials Research and Consultancy Group (MRCG) is a research group that expertise in materials and metallurgical research and investigation based in the Faculty of Mechanical, Universiti Teknologi Malaysia (UTM). MRCG members serve the industries through contract research, consultation and professional trainings.

### SERVICES

- Microstructural Analysis
- Hardness Testing
- High Temperature Creep Test
- Electrochemical Corrosion Test
- Salt Spray Corrosion Test
- Casting & Powder Metallurgy
- Heat Treatment

### FACILITIES

Materials Science and Foundry Laboratories

- Image Analyser
- ESEM, SEM & EDS
- XRD, GDS
- Casting Facilities
- Furnaces
- Sample Preps. facilities

## MEET OUR TEAM

### RESEARCH GROUP LEADER

Assoc. Prof Ts Dr. Muhamad Azizi  
Bin Mat Yajid

### RESEARCH GROUP MEMBER

Prof. Dr. Mohd Hasbullah B Hj. Idris

### RESEARCH GROUP MEMBER

Prof. Dr. Astuty Bt Amrin

### RESEARCH GROUP MEMBER

Assoc. Prof Dr. Tuty Asma Binti  
Abu Bakar

### RESEARCH GROUP MEMBER

Dr Wan Fahmin Faiz Bin Wan Ali

### RESEARCH GROUP MEMBER

Dr. Nor Akmal Binti Fadil

### RESEARCH GROUP MEMBER

Dr. Abdillah Sani Bin Mohd Najib

### RESEARCH GROUP MEMBER

Dr. Abdul Hakim Bin Md Yusop

### RESEARCH GROUP MEMBER

Dr. Foo Jin Hoe

### RESEARCH GROUP MEMBER

Dr Abdollah Bahador



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## Contract Research

Our experts deliver outsourced research and development (R&D) task from private companies, agencies, and organizations that are interested in developing new materials for products, optimizing process conditions, and scientific fundamental research.

### Metals/Alloy

- Shape Memory Alloys
- Biodegradable Metals
- Metal Matrix Composite
- High-Entropy Alloys
- Metal Casting
- Ferrous and Non-Ferrous
- Additive Manufacturing Materials

### Coating Technologies

- Thermal Barrier Coating
- Ceramic Coating
- Electroless/electro-plating
- Anodizing

### Powder Processing

- Powder Metallurgy
- Mechanical Milling
- Sintering Technologies
- Finite Element Simulation

### Corrosion Control

- Green Inhibitors
- Cathodic Protection
- Galvanizing
- Anodizing

### Electrochemistry

- Water Splitting
- Hydrogen Evolution Reaction
- Battery

## Consultation

We offer consultation services and testing to plants operators and inspectors in conducting failure analysis on structures and components. We are capable to conduct metallurgical, chemical, microscopy, mechanical, and finite element analysis. We have experience in analyzing gears, boilers, heat exchanger, and pipe/tubings failure. We provide premium analysis.

### Microscopy

- Optical Microscope
- Scanning Electron
- Microscope

### Foundry

- Casting facility
- High temperature furnace

### Mechanical Test

- Tensile Test (ASTM E-8)
- Cyclic Stress Test
- Vicker Microhardness

### Finite Element Analysis

- Ansys
- Abaqus

### Chemical Analysis

- Energy-dispersive X-ray spectroscopy
- Optical Emission Spectroscopy (OES) Analysis
- Fourier-transform infrared spectroscopy (FTIR)

### Corrosion Test

- Electrochemical Test
- Immersion/Coupon Test
- High temperature corrosion
- Salt Spray Test

## Training

We provide training to companies and individuals for laboratories and microscopy practices. We are also one of the authorized training bodies (ATB) for Institute of Materials Malaysia (IMM).

### In-house Training

- Sample preparation (ASTM E3-11/ASTM E407-07)
- Hardness Test
- Replica Test
- Non-Destructive Testing (ASME Section V)

### Professional Certificate

- IMM Coating Inspector Level 1 / Level 2

### Micro-Credential Courses

- Corrosion and Materials Degradation
- Asset Integrity and Management
- Advanced Technique Materials
- Characterization
- Surface Modification Engineering
- Mechanical Behaviour of Materials

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## FLAGSHIP RESEARCH

New Generation Materials with Ultrahigh Performance for High Impact Industries  
(Collaborator: KISWIRE S.E.A. HQ SDN BHD) – RM200,000

Cutting Tool Performance Enhancement in High Speed Machining of Advanced Materials for  
Malaysian Manufacturing Industry  
(Collaborator: HMPT INDUSTRIES SDN BHD) – RM300,000

