

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

UTeM Rubber R&D Capability

Industry-University Interaction Session

Established on 1st December 2000 as the 1st Technical **Public** University in Malaysia.

Located in the UNESCO world heritage city of **MELAKA**.

Set within 766 acres of lush verdant landscape boasting state-of-the-art facilities in all its seven faculties.

MREPC Seminar Hall, Q Sentral
20th August 2019

Universiti Teknikal Malaysia Melaka (UTeM)



UTeM Main Campus



ASAS PENUBUHAN

- Negara memerlukan sistem pendidikan tinggi teknikal (IPTA-Model2) yang menjadi kesinambungan kepada pendidikan asas dalam bidang teknik dan vokasional
- Menyediakan **Engineering Technologists**
- Universiti Teknikal yang berfungsi sebagai “**Teaching Factory**” bagi menjayakan konsep pengajaran dan pembelajaran yang berasaskan “**problem centered, action and experiential learning**”
- Projek penyelidikan memberi sumbangan langsung kepada keperluan industri
- Berpandukan kepada sistem **Fachhochschule (FH) Jerman** yang membantu dalam pembangunan perindustrian.

NICHE AREA UTeM

**ADVANCED MANUFACTURING
AND COMPUTING TECHNOLOGY**

PROGRAM AKADEMIK

86

PROGRAM

13 PhD
37 Sarjana
29 Sarjana Muda
5 Diploma
2 Program baru
BTech. Mulai
September 2019

Engr.D 24
PhD 688
Sarjana 664
Sarjana Muda 8,383
Diploma 1,171

10,930
PELAJAR

ENROLMEN
Data sehingga 31 Julai 2019
**PELAJAR
ANTARABANGSA**

677
403 PhD
113 Master
161 Bachelor

GRADUAN

26,418

Sejak dari
tahun 2005

GET *the* FACTS

KOMPETENSI
TERAS KEGEMILANGAN



- 65.3% Bekerja
- 12.57% Sambung Belajar
- 3% Meningkatkan kemahiran
- 5.13% Mernunggu Penempatan
- 14% Belum bekerja

- 31 Profesor
- 95 Prof. Madya
- 396 Pensyarah Kanan
- 290 Pensyarah
- 15 Guru Bahasa
- 52 Jurutera Pengajar
- 212 Pentadbir (P&P)
- 972 Pentadbir (Pelaksana)

- Technologist : 182
- Ingenieur : 42
- Chartered Engr: 56
- Certified Tech : 42
- Geospatialist : 3
- L.Ar : 1

Data sehingga 31 Mei 2019

CONCEPT

TUNAI **TECHNOLOGY** **@UNIVERSITY** **ADVANCING** **INDUSTRIES**

A University that produces highly skilled technologists and enhances inventions, thus impacting industries and society.

T.U.N.A.I

KOMPETENSI
TERAS KEGEMILANGAN

ASPIRASI UTeM
bersama
NAIB CANSELOR

IMPACTS

INDUSTRY

Practice-based and highly skilled technologists and relevant workforce

SOCIETY

Solution providers to the industries and community

ENVIRONMENT

Technology related solutions

UNIVERSITY

Vibrant Academia-Industry-Society ecosystem

GLOBALIZATION

Visibility - UTeM Melaka



UTeM MELAKA

Always A Pioneer
Always Ahead

FOCUS

- Advanced Manufacturing (Engineering)
- Computing Technology – AI and IoT
- Trans-disciplinary & inter-institutional research
- Technology-based program

DELIVERABLES

- Highly skilled talent and relevant workforce
- Accomplished technologists and professionals (technology scholars)
- Industry-driven academic programs
- Dynamic Publications and Industrial IPs



OUR RUBBER RESEARCH STRENGTH.....



Jeefferie
Scopus
H-Index: 7

- Functional Nanomaterials
- Polymer Nanocomposites
- Elastomeric Rubber and Thermoplastics
- Carbon Materials

jeefferie@utem.edu.my

Lau
Scopus
H-Index: 5

- Electrophoretic Deposition
- Polyelectrolyte Functional Coating
- Rubber curing measurement tool

ktlau@utem.edu.my

Chang
Scopus
H-Index: 3

- Mechanical Testing of 1D Nanostructures
- Electron Microscopy
- Polymer Composites
- Biodegradable Composites

chang@utem.edu.my

Haidir

- Finite Element Modelling
- Fracture Mechanics
- HVAC

haidir@utem.edu.my

Edeerozey
Scopus
H-Index: 8

- Polymer/rubber matrix composites

edee@utem.edu.my

Effendy
Scopus
H-Index: 5

hairuleffendy@utem.edu.my

- Polymer/rubber matrix composites

Qumrul
Scopus
H-Index: 8

qumrul@utem.edu.my

Liew
Scopus
H-Index: 6

payjun@utem.edu.my

- Natural rubber/Polymer Composite/Nanocomposites
- Optimization (Response Surface Methodology)
- Rubber for Body Armour

noraiham@utem.edu.my

- Polymer Composites
- Metallurgy
- Recycling of Carbon Fibres

- Micro/nano machining
- Electrical Discharge Machining
- Nanofluid for machining



About
US...



9 Brains



Scopus H-index=
50



No. of citations >1300



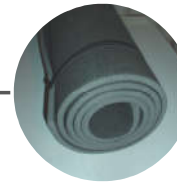
More than 300
technical papers



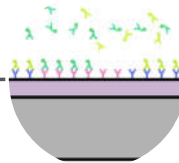
10 Intellectual
Property

OUR RUBBER RELATED RESEARCH.....

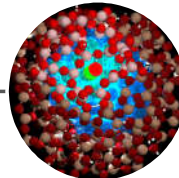
1. RUBBER MOLDED PART FOR AUTOMOTIVE (ENGINE MOUNT)
2. RUBBER-TO-METAL BONDING
3. LIGHTWEIGHT METAL FOR AUTOMOTIVE



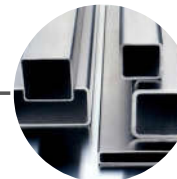
Natural Rubber
Nanocomposites
Since 2012-2018



Natural Rubber Blend &
Chemical Modification
Since 2012-2018



Pretreatment of
Nanoparticles
Since 2012-Present

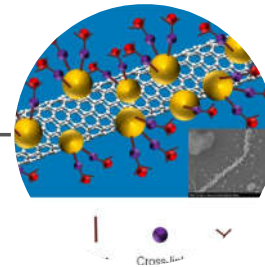


Steel replacement
with Al alloy
Since 2010-Present

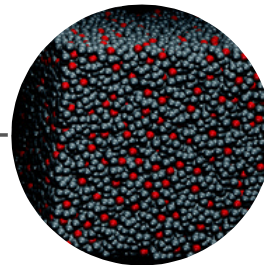
AUTOMOTIVE

OUR RUBBER RELATED RESEARCH.....

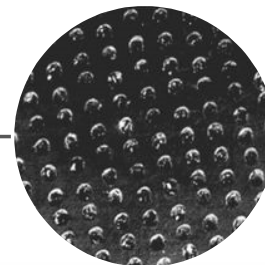
1. RUBBER MOLDED PART FOR AUTOMOTIVE (ENGINE MOUNT)
2. RUBBER-TO-METAL BONDING



Al Alloy
NanoSurface
Technology
Since 2018-
Present



NanoAdhesive
Technology
Since 2018-Present

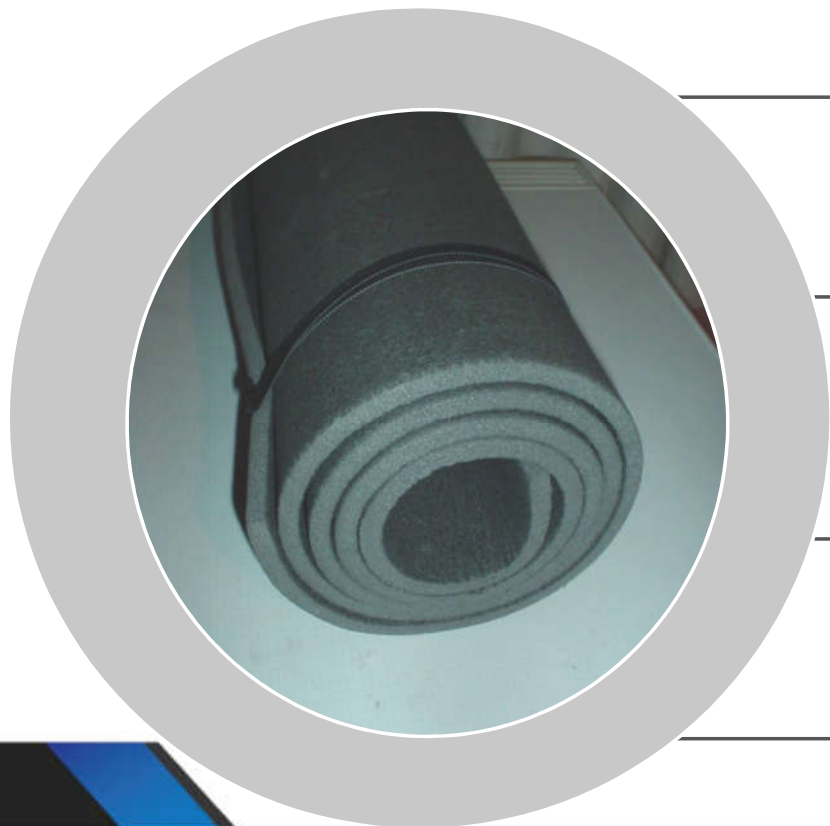


Surface
Technology for
Heat
Dissipation
Since 2015-
2018

SURFACE
TECHNOLOGY

OUR FUTURE RUBBER RELATED RESEARCH.....

- ❖ SUBSTITUTE HIGH POLYAROMATIC HYDROCARBON PROCESSING OIL IN RUBBER COMPOUNDING
- ❖ FORMULATION & PROCESS OPTIMIZATION



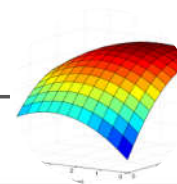
Natural Oil



Waste Oil



Hybrid Oil



Optimization
of Process
using Statistical
Tools

RUBBER
COMPOUND

Hardware & Software for Rubber Research

Analysis Technique & Software

- SEM
- XRD
- DSC
- FTIR
- Raman Spectroscopy
- Optical Microscope
- Strain gauge
- Particle Size Analyser
- Image Analyser
- UV-Vis Spectrometer
- CATIA software
- Solidworks software
- Design Expert software
- AutoCAD software
- CFD software

Testing

- Universal testing machine
- Hardness tester
- Microhardness tester
- Nanoindenter
- Impact tester
- Densimeter
- Durometer
- Melt flow index
- Fatigue Machine
- Sound Impedance Tester
- Radiography Tester
- Electrical Conductivity Tester
- Pin-On-Disc Tester
- Computerized measurement machine
- High speed camera

Preparation

- Internal Mixer
- Injection Molding
- Hot press
- CVD
- PVD
- Drying oven
- Ultrasonicator
- Magnetic Stirrer
- Mechanical Stirrer
- Crusher
- Pulveriser
- Ultrasonic Bath
- Furnace
- Automatic Grinder & Polisher
- Automatic Siever
- Rapid Prototyping
- CNC 5-axis machine
- Diamond cutter
- Laser cutter

Research Facilities in
the Faculty of
Manufacturing
Engineering,
UTeM

Centre of
Sustainable System
& Innovative Design
(COSSID)

UTeM adalah

MELAKA adalah

UTeM

PROMOSI.VISIBILITI.GLOBALISASI



ASPIRASI UTeM
bersama
NAIB CANSELOR

f t i y
MyUTeM