

# POLYMER AND MATERIAL PROCESS ENGINEERING

# TIER 5 – EK GROUP (EK)

<b>Name of EK</b>	<b>:</b>	<b>Polymer and Material Process Engineering</b>
<b>Tier</b>	<b>:</b>	<b>5</b>
<b>Leader</b>	<b>:</b>	<b>Dr. Rahida Wati Sharudin</b>
<b>CoRe</b>	<b>:</b>	<b>Frontier Materials &amp; Industrial Application (FMIA)</b>
<b>Registered Faculty</b>	<b>:</b>	<b>Chemical Engineering</b>
<b>Registration date (Senate Approval)</b>	<b>:</b>	<b>26 October 2017</b>
<b>UiTM Niche Area</b>	<b>:</b>	<b>Chemical &amp; Advanced Materials (W)</b>
<b>EK Niche Area</b>	<b>:</b>	<b>Research on preparing functional materials with improved properties by controlling various processing conditions and the materials' properties</b>

# BACKGROUND OF MEMBERS

BIL	NAMA	NO ID STAF	KELAYAKAN AKADEMIK	FAKULTI	BIDANG KEPAKARAN
1	Dr. Rahida Wati Sharudin	302931	PhD	Fakulti Kejuruteraan Kimia	Polymer Processing
2	Prof. Madya Dr. Rahmah Mohamed	97288	PhD	Fakulti Sains Gunaan	Polymer Technology
3	Dr. Ana Najwa Mustapa	254322	PhD	Fakulti Kejuruteraan Kimia	Supercritical Fluid
4	Dr. Suhaiza Hanim Hanipah	237129	PhD	Fakulti Kejuruteraan Kimia	Natural Fiber
5	Suffiyana Akbar	243689	Master	Fakulti Kejuruteraan Kimia	Polymer
6	Christina Vargis Jones	245865	Master	Fakulti Kejuruteraan Kimia	Polymer Composite
7	Arbanah Muhammad	317188	Master	Fakulti Kejuruteraan Kimia (P. Gudang)	Biopolymer, Biocomposite
8	Ahmad Ramli Rashidi	316147	Master	Fakulti Kejuruteraan Kimia (P. Gudang)	Polymer Composite



# Niche Area & Relevance of RIG

Wide range of study related to polymer

1. *Polymer Science*
2. *Polymer Processing*

## *Polymer Science*

**Synthesizing new functional material:  
Rubber and elastomer-based**

## *Polymer Processing*

**Preparing functional materials  
with improved properties by  
controlling various processing  
conditions and the materials'  
properties**

## **Polymer Blending**

1. *Polymer- Polymer*
2. *Polymer- Inorganic filler*
3. *Polymer- Micelle*

## **Polymer Foaming**



# Research highlight

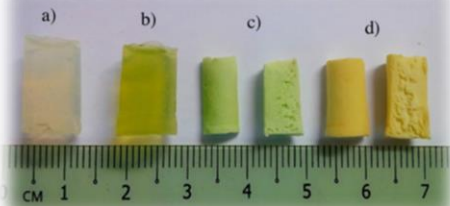
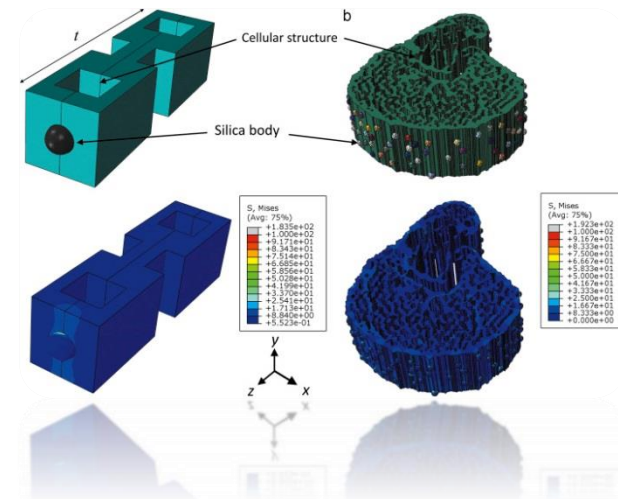
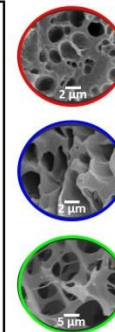
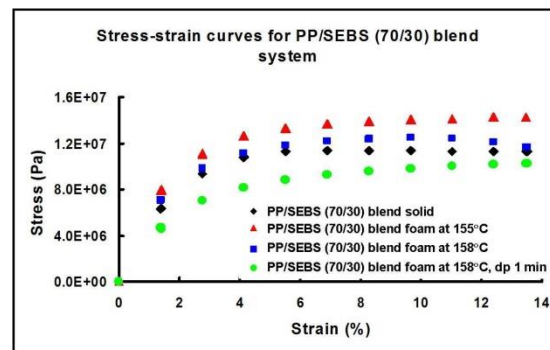
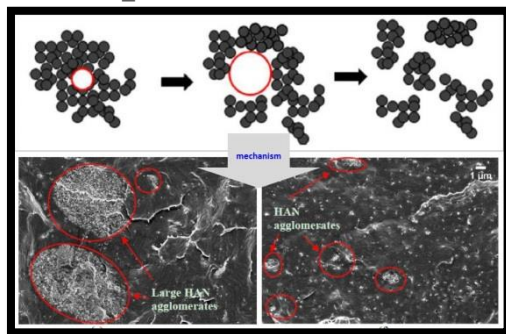
→ Towards preparing functional material with improved properties (**POLYMER COMPOSITE**) and lightweight application (**POLYMER FOAM & AEROGEL**).

## Activities

→ Deals with a wide range of study related to polymer material

→ Focusing on 4 areas (**polymer blending, polymer foaming, drying by SCF tech and modeling and simulation**).

→ Expand the structure control by integrating with supercritical fluid technologies



→ Yield strength of foam samples are enhanced over solid samples as long as the cell size kept smaller than 2 μm.

# ACHIEVEMENT(Grant)



BIL	NAMA PENYELIDIK UTAMA	NAMA PROJEK	JENIS	AGENSI PEMBIAYA	STATUS	TARIKH MULA	TARIKH TAMAT	JUMLAH PEMBIAYAAN (RM)
1	RAHIDA WATI SHARUDIN	BUBBLE NUCLEATION AND LOCATION CONTROL OF NOVEL POLYMER BLEND FOAM	RAGS	UITM	TAMAT	15/9/2013	14/3/2016	65,000
2	RAHIDA WATI SHARUDIN	OPTIMIZATION OF CARBON DIOXIDE DIFFUSION IN RUBBER FOAM VIA GENETIC ALGORITHM	LESTARI	UITM	AKTIF	1/7/2016	30/6/2018	20,000
3	RAHMAH MOHAMED	FABRICATION OF BLOW MOULDED DEGRADABLE PLASTIC BOTTLES FOR SAFE AND GREEN DRINKING BOTTLE	SINERGI	UITM	TAMAT	6/1/2014	31/5/2016	40,000
4	RAHMAH MOHAMED	FABRICATION TECHNIQUE PROGRAMME ON DEGRADABLE PLASTIC BIOCOMPOSITE PRODUCT FOR GREEN ECOPOLYMER SDN BHD	KNOWLEDGE TRANSFER PROGRAM	KPT	TAMAT	16/7/2013	16/7/2015	136,325
5	RAHMAH MOHAMED	THERMAL INSULATION CHARACTERISTICS OF NANOCRYSTAL AND AEROGEL FILLED UPR/EPS HYBRID COMPOSITES	RIF	UITM	TAMAT	6/1/2012	30/5/2014	40,000
6	CHRISTINA VARGIS JONES	DETECTION HIDDEN OBJECTS ON HUMAN BODY USING PASSIVE FORWARD SCATTERING RADAR	LESTARI	UITM	AKTIF	1/9/2016	31/8/2018	20,000
7	ARBANAH MUHAMMAD	THE TREATMENT OF KENAF FIBRE TO BE INCORPORATED IN POLYLACTIC ACID FOR DEVELOPMENT OF BIOCOMPOSITE	GERAN DALAMAN	UITM JOHOR	TAMAT	10/1/2015	30/9/2016	500
8	AHMAD RAMLI RASHIDI	THE POTENTIAL OF HEVEA BRASILLENIS LEAF AS FILLER IN HDPE/RPET BIOCOMPOSITES FOR INDUSTRIAL APPLICATION	GERAN DALAMAN	UITM JOHOR	TAMAT	1/3/2016	31/12/2016	500
9	ANA NAJWA MUSTAPA	SYNTHESIS OF HYBRID Î²ETA-CYCLODEXTRIN/ALGINATE AEROGELS VIA CHEMICAL CROSS-LINKING FOR DRUG DELIVERY SYSTEM	LESTARI	UITM	AKTIF	1/7/2017	30/6/2019	20,000

**Total: RM 351,352**