KEMENTERIAN PENDIDIKAN MALAYSIA

JPT | JABATAN PENDIDIKAN TINGGI

Pecipta'19

UNIVERSITI SAINS MALAYSIA

APEX™

50 YEARS OF LEADING KNOWLEDGE FOR CHANGE 1969-2019 USM UNIVERSITI SAINS MALAYSIA WE LEAD

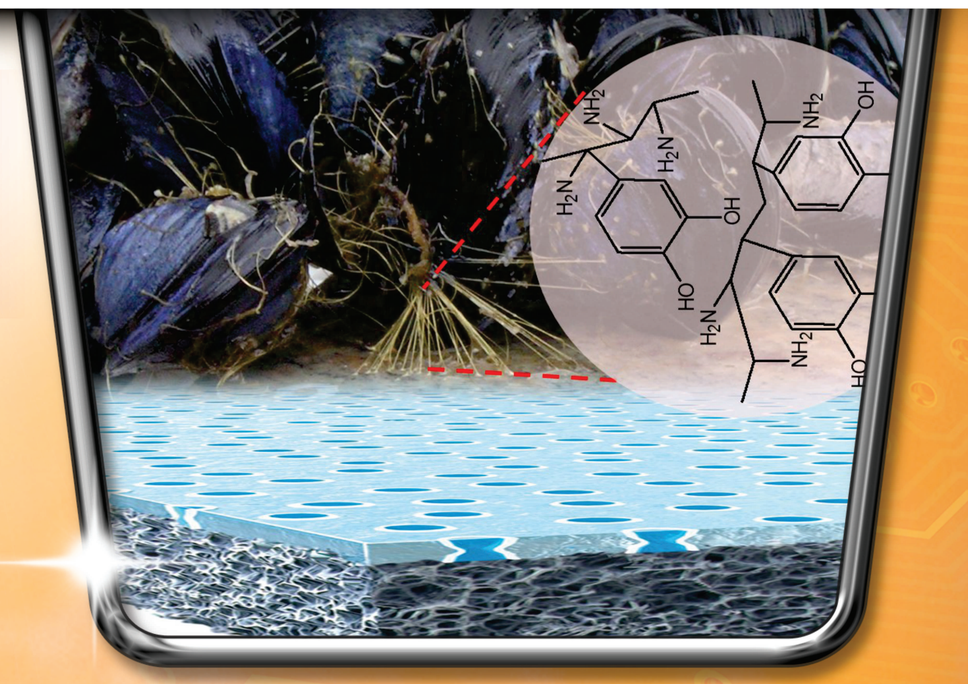
Researchers:

ASSOC. PROF. DR. SUZYLAWATI ISMAIL

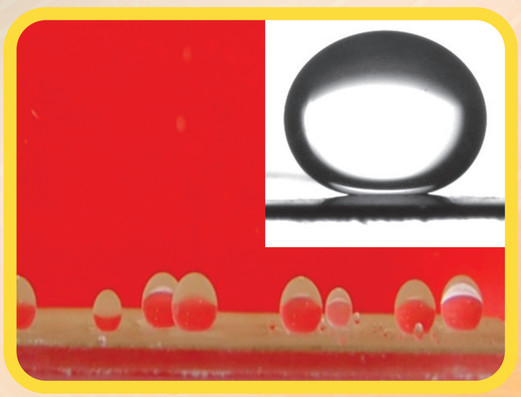
Faraziehan Senusi

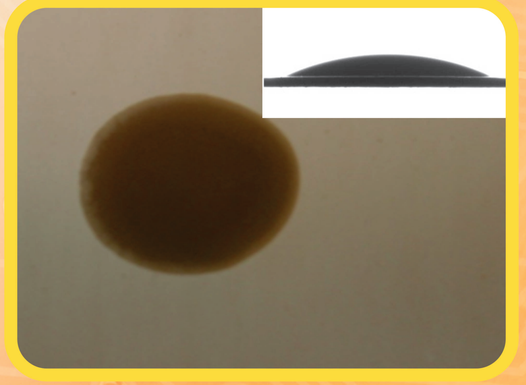
Dr. Syahida Farhan Azha

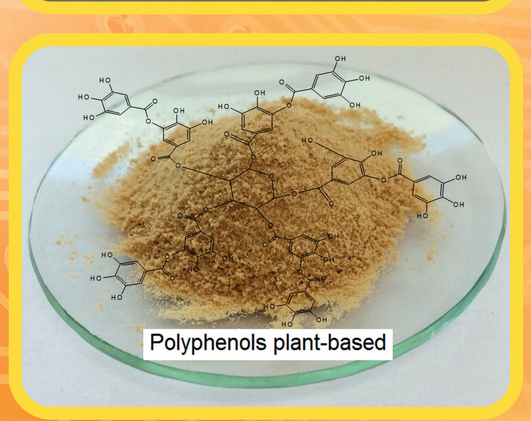
Shazlina Abd. Hamid

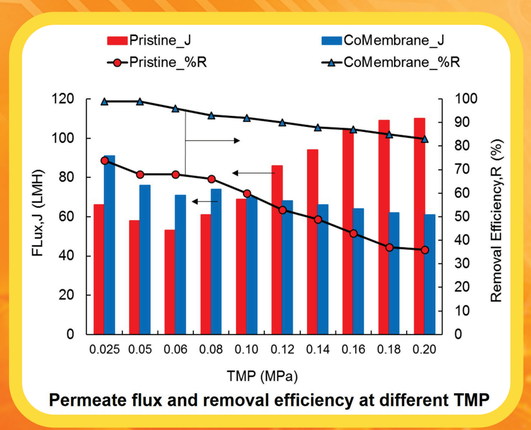


OLEOPHOBIC-HYDROCOATING MEMBRANE

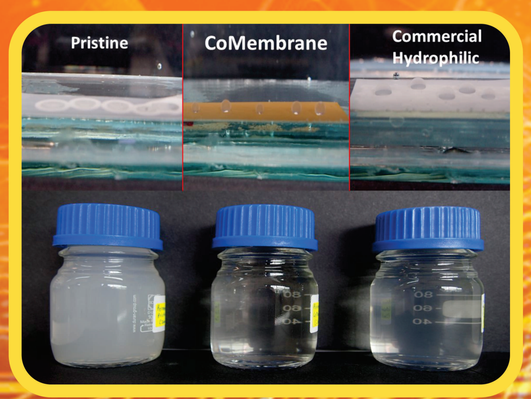








Permeate flux and removal efficiency at different TMP



Problem Statements

- Improper disposal of oil and stable emulsion droplets, affect the environment and human health.
- Severe fouling problem due to hydrophobicity properties of the organic polymer membrane.

Novelty & Inventiveness

- Oleophobic-Hydrocoating Membrane inspired by adhesive of mussel foot.
- Formulated using low-cost natural polyphenols derived from plants.
- Possess hydrophilic and underwater oleophobic surface with low oil adhesion.
- Chemically stable with high permeability and efficient removal of emulsion oil.

Applicability

- Facile method for membrane surface modification process.
- Process can be applied without high-end equipment and no new equipment required for the existing plant.
- Process can be implemented for any types of membrane modules either commercialize membrane or own fabricated membrane.

Product/Technology Readiness

- TRL 4: Lab-Scale.

Research Achievement

- Research Achievement
  - Journal Publication (8) - International Journal of Environmental Science & Technology, Chemical Engineering Journal, Applied Clay Science, Dyes & Pigments, Journal of Industrial & Engineering Chemistry, AIP Conference Proceeding (ISSN), Journal of Water Process Engineering.
  - Book Chapter (1) - Springer International Publishing (2018)
  - Research Fund (3) - R&D Fund Grant (2017-2019), RUI (2015-2018), FRGS (2013-2016)
  - Talent Development (8) - 3 PhD, 3 MSc, 2 Undergraduates
  - Participation in international Conference (6) - ISGET 2019, ICENV 2018, AIC 2019, ISCE 2016
  - Award (2) – 1 Gold and 1 Bronze (Si2TE 2018)

Intellectual Property

- Copyright: LY2019000406
- Patent Search: Novel, Inventive, Industrial applicable

Commercialization Potential

- Performances comparable with commercial membrane product.
- Membrane fabricator industries and environmental service companies as potential partners.

Level of Impact

- Reduce the cost of membrane modification and emulsion oil treatment process.
- Improve the quality of water and environment for the society.

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