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APEX™

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

Researchers:

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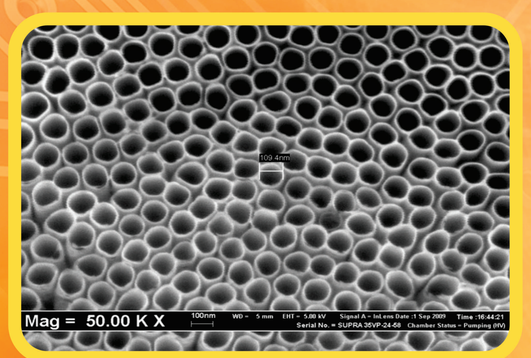
- **COPYRIGHT (CRLY00015014)**

PPO WASTE WATER TREATMENT TECHNOLOGY FOR SUSTAINABLE AQUATIC ENVIRONMENT



Introduction

PPO is a physico photo-oxidation effluent treatment technology to treat textile dye effluents with 99.99% efficiency. It removes colour, heavy metal and solid suspended particles from effluent. The prototype is ready and has been installed in textile industry and proven that the discharge quality has met DOE requirement.

Problem Statement

- The estimated total effluent discharge from textile plants is 625 million gallons per day (EPA).
- In Kota Bharu alone, 50 to 70 thousand litres of dye effluents are released daily into the river from Batik industries (SME) and only has five per cent level of compliance
- The untreated textile wastewater is high in color, chemical oxygen demand (COD), biochemical oxygen demand (BOD), suspended solids (SS), heavy metals, pH and turbidity thus toxic to aquatic ecosystem and environment

Novelty and Inventiveness

- A simple and affordable effluent treatment system for SME with low maintenance cost
- System that utilizes consumables made of waste and advanced materials
- The efficiency of PPO meets the DOE standard requirement of effluent discharge quality

Applicability & Benefits

PPO has broad prospects of applications in textile production and other industrial effluents. The benefits are as follows:

- Improves the BOD and COD level up to 99.99%.
- It adsorb the heavy metal and mineralize the pollutants by decomposing or transforming into less harmful substances in the presence of hybrid photocatalyst and light that operated at room temperature.
- Can recycle the water after decolorizes the dye
- Simple maintenance

Product/Technology Readiness:

- Technology Readiness Level: 6 (in Relevant Environment)

Research Achievement

- ISI Publication-7 (Nanotechnology, Thin Solid Films, JALCOM, Materials Chemistry and Physics)
- Financial support by FRGS, RUI, PPRN
- Talent Development: 3 MSc, 3 PhD graduated

Intellectual Property Status

- 1 patent granted-MY-157270-A
- 3 copyrights - CRLY00011591, CRLY00015015 and CRLY00015014

Industry/Business Partner

- Process Tech Design Sdn Bhd (Fabrication of PPO Systems)
- Ayu Fashion Sdn. Bhd. Kelantan (Client)
- QDOS Flexcircuits Sdn. Bhd. Malaysia (Client)
- PT Dalong Bioteknologi, Indonesia-ongoing

Commercial Potential

- In Malaysia, there are 600 registered SME textile industries-10% per year would be able to create revenue of RM1,200,000 per year.

Impact of the product

- Improved water quality, conserve aquatic ecosystem to ensure safe food supply to mankind
- Reduce large quantity of sludge production and non-toxic compound thus contribute to Green Environment
- Create new business-sell the system and consumables made from waste materials- POFA-AC & Photocatalyst.

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