

# 27 SKAM

**27<sup>th</sup> REGIONAL SYMPOSIUM OF MALAYSIA  
ANALYTICAL SCIENCES  
SIMPOSIUM KIMIA ANALISIS MALAYSIA KE-27**

**ANALYTICAL SCIENCES FOR ECO-FRIENDLY  
SOCIETY**

**SAINS ANALISIS UNTUK MASYARAKAT  
MESRA ALAM**

**PROGRAMME & ABSTRACT BOOK**

8-10<sup>th</sup> December 2014  
KSL Resorts, Johor Bahru  
Johor, Malaysia

Organized by:

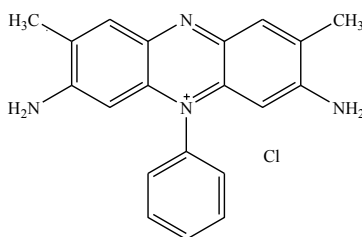


**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

EOPC12

**Acid-Treated Graphitic Mesoporous Carbon for Adsorption of Basic Red 2 Dye in Aqueous Solution**Salasiah Endud<sup>1,2\*</sup>, Nur Izzatie Hannah Razman<sup>1</sup>, Zainab Ramli<sup>1,2</sup>, Hendrik Oktendy Lintang<sup>1,2,3</sup>, Mahsa Khoshkhooy Yazdi<sup>1</sup>, Izan Izwan Misnon<sup>4</sup><sup>1</sup>Department of Chemistry, Faculty of Science, Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor, Malaysia<sup>2</sup>Novel Material Research Group, Nanotechnology Research Alliance, Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor, Malaysia<sup>3</sup>Ibnu Sina Institute for Fundamental Science Studies, Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor, Malaysia<sup>4</sup>Nanostructured Renewable Energy Materials Laboratory, Faculty of Industrial Sciences & Technology, Universiti Malaysia Pahang, 26300 Kuantan, Pahang

A graphitic mesoporous carbon-based material (GMC) was prepared by a nano-casting process. SBA-15 was used as a hard template and sucrose as a carbon precursor in this procedure. To generate surface functionalities, GMC was treated with nitric acid. The acid-treated GMC material was then used as an adsorbent for Basic Red 2 dye (BR2) in aqueous solutions. The morphology, pore structure and surface functional groups of GMC samples were analyzed by field emission scanning electron microscopy (FESEM), Brunauer-Emmett-Teller method (BET), X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FT-IR) and Boehm titration. Nitrogen adsorption-desorption analysis revealed a type IV isotherm characteristic of mesoporous materials with BET surface area of approximately  $1000 \text{ m}^2\text{g}^{-1}$  and pore volume of  $0.9 \text{ cm}^3\text{g}^{-1}$ . The effects of different adsorption parameters such as initial dye solution pH, initial dye solution concentration and temperature on BR2 uptake were investigated. Surface area of BET and pore volume were decreased after the treatment but the adsorption capacity of BR2 increased to its optimum value in initial dye solution concentration of  $200 \text{ mgL}^{-1}$  and pH of 10 at  $60 \text{ }^\circ\text{C}$ .

**Scheme 1** The molecular structure of Basic Red 2.**Ms. Nur Izzatie Hannah Razman**

Universiti Teknologi Malaysia, Malaysia

Phone: +601 37025637

E-mail: izzatihanna@yahoo.com.my

Research interests: Inorganic Chemistry

2007-2010

B.Sc. (Chemistry), UTM, Malaysia

2010-present

PhD candidate, UTM, Malaysia

