

Arum, B. M., 2018, Preparasi Material Hidrofobik Berbasis TiO₂-Asam Palmitat secara Layer by Layer, SKRIPSI, dibawah bimbingan Dra. Usreg Sri Handajani, M.Si dan Alfa Akustia Widati, S.Si, M.Si, Departemen Kimia, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya.

ABSTRAK

Self-cleaning sangat dibutuhkan untuk efisiensi pembersihan dan efektivitas biaya. Pada penelitian ini dilakukan preparasi material hidrofobik berbasis TiO₂-asam palmitat pada substrat kaca, kain, dan batu. dalam preparasi ini dilakukan pelapisan TiO₂ dan asam palmitat menggunakan teknik *dip coating* secara *layer by layer*. Pengukuran yang dilakukan pada penelitian ini adalah sudut kontak dengan variasi konsentrasi TiO₂ dan asam palmitat, waktu deposisi, suhu pengeringan, dan pH hidrolisis TiO₂. Sifat hidrofobik diukur melalui pengukuran sudut kontak permukaan terhadap air ($\theta > 90^\circ$). Pada kondisi optimum, sudut kontak kaca, kain, dan batu berturut-turut sebesar 109,2°, 124°, dan 129,6°. Karakterisasi material yang digunakan diantaranya spektrofotometer UV-Vis, *Fourier Transform Infrared* (FTIR), dan *Scanning Electron Microscope* (SEM). Dilakukan pula analisis stabilitas substrat terhadap udara luar selama 4 minggu.

Kata kunci: *Self-cleaning, Hidrofobik, TiO₂, Asam palmitat*

Arum, B. M., 2018, Preparation of Hydrophobic Material Based on TiO₂-Palmitic Acid in Layer by Layer, This script is under achievement of Dra. Usreg Sri Handajani, M.Si dan Alfa Akustia Widati, S.Si, M.Si, Departemen Kimia, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya.

ABSTRACT

Self-cleaning characteristics of such surfaces are vital for the cost effective and efficiency operations. Self-cleaning hydrophobic properties of TiO₂-palmitic acid on glass, cotton fabric, and stone substrates have been investigated in this study. In this fabrication, palmitic acid was coated on TiO₂ by applying dip coating technique (layer by layer). The optimum water contact angle with variety of TiO₂ and palmitic acid concentration, deposition time, drying temperature, and pH condition of the resulting surfaces are measured. The hydrophobicity was measured by measuring the water contact angle on the substrates. In optimized condition, the water contact angle of glass, cotton fabric and stone are 109.2°, 124°, and 129.6°. Resulted hydrophobic materials were characterized by UV-Visible spectrophotometer, Fourier Transform Infrared spectroscopy (FTIR), and Scanning Electron Microscope (SEM). Stability against outside air on the hydrophobicity of the substrates in 4 weeks were also examined.

Kata kunci: *Self-cleaning, Hydrophobic, TiO₂, Palmitic acid*