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Nur Fatin Amalina Muhammad Sanusi[1], Mohd Hizami Mohd Yusoff[1], Ooi Boon Seng[1], Mohd Sabirin Marzuki[2], Ahmad Zuhairi Abdullah[1,*]

[1]School of Chemical Engineering, Universiti Sains Malaysia, Engineering Campus, 14300 Nibong Tebal, Penang, Malaysia.

[2]SilTerra Malaysia Sdn Bhd, Lot 8, Industrial Zone Phase 2, Kulim Hi-Tech Park, 09000 Kulim, Kedah, Malaysia.

Tel: +604-599 6411, Fax: +604-594 1013

Email: chzuhairi@usm.my

Abstract

Membrane separation based on ultrafiltration for the recovery of spent tungsten slurry from chemical mechanical polishing (CMP) process has been investigated. Five polymeric membranes with different molecular weight cut-off (MWCO) i.e. 10kDa PES, 30kDa PES, 100kDa PES, 50kDa PS and 50kDa PVDF were successfully applied. Flux analysis was conducted to study the fouling phenomena and the fouling effects on membrane surface were elucidated by means of SEM and AFM analyses. Almost steady fluxes were reached after about 60 min of filtration process. Meanwhile, the membrane fouling was mainly due to the formation of cake layer on the membrane surface leading to blockage of membrane pores. On top of that, 50kDa PS membrane showed the highest potential in filtrating and concentrating the CMP spent tungsten slurry with 92 % retention of silica particles and 42 % retention of tungsten. Furthermore, it also achieved