

***PP1.3.3 Investigation of SO<sub>2</sub> Adsorption Process on Microfibrous Entrapped Sorbents for Solid Oxide Fuel Cell Cathode Protection***

Peng Cheng, Bruce Tatarchuk

Auburn University

We investigated the adsorption process between SO<sub>2</sub> and MnOx/γ-Al<sub>2</sub>O<sub>3</sub>. A mathematical model was proposed based on axial dispersion, external and internal diffusion resistance, and surface reaction mechanism. With two predetermined rate constants, the model can predict the breakthrough curves of packed bed (PB) and microfibrous entrapped sorbent (MFES) with acceptable deviations. Due to minimal axial dispersion, uniform flow pattern, and longer residence time, MFES outperformed the conventional PB consisting the same sorbent particle size in terms of reduction in SO<sub>2</sub> concentration. Furthermore, the MFES retained more breakthrough capacity after multiple regeneration cycles. Because of these superior properties, MFES is considered as a promising approach to remove SO<sub>2</sub> from the cathode air stream.