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Modelling Purification of Flue Gas in Porous Catalytic Media¹ KRISTIAN KIRADJIEV, CHRIS BREWARD, IAN GRIFFITHS, University of Oxford, DONALD SCHWENDEMAN, RPI, UWE BEUSCHER, VASUDEVAN VENKATESHWARAN, W. L. Gore and Associates — In this talk, we present a mathematical model for flue-gas purification in a porous filter with catalyst. In particular, we consider a device that converts gaseous sulphur dioxide into liquid sulphuric acid which accumulates, causing clogging. Using the theory of homogenisation, we develop a multiscale model that takes into account local properties of the filter to describe the overall device operation. We explore the effect of changing various dimensionless parameters on the filter efficiency. We also consider asymptotic reductions to the full system and compare them with full numerical solutions.

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