

MO'TASSEM AL-ARYDAH
University of Ottawa

Existence of positive solution to a nonlinear system of PDE in a domain with a triple-phase boundary

We consider a system of nonlinear partial differential equations describing the reaction-diffusion dynamics near a triple-phase boundary in catalyst layer of hydrogen fuel cells. The system couples the dynamics in free air, porous and surface domains. Using certain a priori estimates, variational methods and fixed point theorem we prove the existence of a positive weak solution.