

Cross diffusion equations in a moving domain

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We show global-in-time existence of bounded weak solutions to non linear degenerate cross diffusion equations in a one dimensional moving domain. These equations stem from the modelisation of the evolution of the concentration of chemical species composing a crystalline solid during a physical vapor deposition process. To do so we use the so called *boundedness-by-entropy* technique developed in [1], [2] and [3] based on the gradient flow formalism of the system. Moreover, we are interested in controlling the fluxes of the different atomic species during the process in order to reach a certain desired final profile of concentrations. This problem is formulated as an optimal control problem to which we prove the existence of a solution. Finally, some numerical results and comparison with true experiments are presented.

Références

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