Abstract

The aim of this paper is to study the influence of quasi-periodic gravitational modulation on convective instability of reaction fronts in porous media. The model contains reaction diffusion equations coupled with the hydrodynamic equations under the Darcy-Boussinesq approximation. The direct numerical simulation of the dimensionless problem is fulfilled using the alternative direction method and the fast Fourier transform method. The convective instability boundary is found depending on the Lewis number and the amplitude of vibration.

References

Direct Numerical Simulations of Reaction Fronts Propagation under Quasi-Periodic Gravitational Modulation


Index Terms

Computer Science

Applied Sciences

Keywords

Direct numerical simulation quasi-vibration porous medium reaction front