

Diffusive fingering in a precipitation reaction driven by autocatalysis

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The autocatalytic chlorite-tetrathionate reaction is investigated in a gelled medium containing barium ions, resulting in the formation of barium sulfate precipitate in the wake of the reaction front. When the reaction is run at temperatures around the sol-gel transition of the matrix, precipitate patterns resembling those of viscous fingering are observed. The main driving force behind the pattern formation is the selective binding of the autocatalyst that leads to diffusive instability, the presence of the precipitate reaction however modifies the long time behavior of the system.