M. J. B. Hauser, R. H. Simoyi:
Inhomogeneous precipitation patterns in a chemical wave. Effect of thermocapillary convection
Chemical Physics Letters **1994**, 227, 593 - 600

Abstract:

Inhomogeneous $BaSO_4$ precipitation patterns are formed behind the travelling wave in the bistable chlorite - thiourea - barium chloride reaction system. The leading front is accompanied by a large evolution of heat which causes convection. Thermocapillary convection is found to play a key role in the pattern formation. In shallow solution layers, $BaSO_4$ precipitates inhomogeneously in the wake of the wave, provided the surface tension is sufficiently high. In deeper layers, the convection at the surface becomes independent from the convective motion in the bulk of the solution. When the surface tension is lowered, however, only homogeneous $BaSO_4$ precipitation is observed in the wake of the leading front.