



## **On the existence of stationary reaction fronts in precipitation-dissolution systems**

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Coupled precipitation-dissolution processes are ubiquitous in hydrogeochemical systems which are out of chemical equilibrium. However, as already remarked by Ortoleva et al. [1], the precipitation front will in general move with a velocity different from that of a dissolution front; thus the distance between them will increase in time. However, there are a number of systems where the both fronts appear to move with the same velocity. One example is the terra rossa formation process [2], in which kaolinite precipitation produces hydrogen ions that dissolve the underlying calcite. In this case the velocities of the dissolution and precipitation front agree to within 1%, which does not seem accidental. In this communication, we propose a possible mechanism of such a front synchronization, and study its further implications for the dynamics of the system.

[1] P. Ortoleva et al., *Physica D*: 19, 334 (1986)

[2] E. Merino and A. Banerjee, *J. Geol.*, 116, 62 (2008)