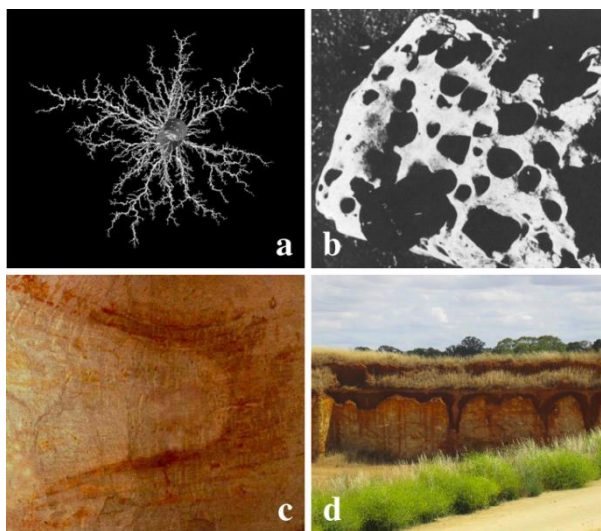


Postdoctoral position at the University of Warsaw

Reactive Flow in Porous Media

We are looking for a highly creative and motivated postdoctoral fellow to work in the project involving analysis of pattern formation in dissolving porous rocks. Strong coupling between the flow and dissolution in such systems may lead to the spontaneous formation of pronounced dissolution channels ("wormholes"). The form of these channels and speed of their advancement depend on the flow rate, reaction rate and porosity difference between dissolved and undissolved mineral, but there is as yet no deeper understanding of the exact form of this dependence. In the project, we will attack this problem by the combination of experiments and numerical modeling. On the experimental level, we will perform acidization experiments on rock samples collected in karst outcrops, where natural dissolution channels are present. The samples will then be analyzed using neutron and X-ray imaging techniques in order to assess the changes in the micro-architecture of the pores induced by the dissolution. At the same time a numerical model of flow and transport in porous matrix will be constructed. The results of numerical modeling will complement and be validated upon the experimental data.



Examples of patterns produced by the dissolution-precipitation processes in rocks: (a) wormholes (30 cm long) produced during carbonate acidization (b) holes formed by limestone dissolution (5–10 cm across) (c) a uranium roll (~1 m), and (d) terra rossa fingers (~10 m).

We are thus looking for a motivated postdoctoral fellow who will either have an experimental background and will be willing to interact with theoreticians or a person with a strong analytical/numerical background who will be willing to venture into experimental work. The position start date is flexible – some time between May and September 2017 would be an ideal starting date. The salary is 5000 PLN gross (~1200 EUR) per month, which is competitive for the cost of living in Warsaw. The contract includes health coverage for Poland and EU. The post holder will have access to travel funds for international meetings/conferences. Funding will initially be for a period of one year, with the expectation of renewal for another year based on satisfactory performance. Inquiries and applications should be sent by email to Piotr Szymczak (Piotr.Szymczak@fuw.edu.pl). Applications should include a detailed CV, a cover letter with a short statement of research interests and motivation and two names of potential referees. Complete applications should be received before Jan 28, 2017 for full consideration. Later applications will also be accepted until the suitable candidate is identified.

More information about the research in the group: <http://www.fuw.edu.pl/~piotrek>