

STUDY OF THE MIGRATION OF NANOIRON PARTICLES IN A 3-D HOMOGENEOUS ARTIFICIAL AQUIFER

Kristýna Pešková¹⁾, Kumiko Miyajima²⁾, Jürgen Braun²⁾

¹⁾ *Institute for Nanomaterials, Advanced Technologies and Innovation (CXI), Technical University of Liberec, Studentská 2, Liberec, 461 17, Czech Republic; e-mail: kristyna.peskova@tul.cz*

²⁾ *Research Facility for Subsurface Remediation (VEGAS), Institute for Modelling Hydraulic and Environmental Systems, University of Stuttgart, Pfaffenwaldring 61, Stuttgart D-70569, Germany*

Abstract

Migration of zero valent iron in the subsurface is a task solved in the long term from different points of view at many workplaces. Experimental equipment in these workplaces mostly enables only one-dimensional assignments (laboratory columns) to be studied in different orders with various levels of detection of migrant substances. Three-dimensional experimental equipment from the VEGAS research facility, University of Stuttgart with large scale dimensions of approximately 8m x 1m x 3m (L x W x H) enables the migration and interaction of nanoiron particles to be studied in a homogeneous artificially created aquifer under conditions approaching the real conditions of a contaminated site. The whole experiment is linked to the international research project NANOREM, which aims to show that the application of nanoparticles is a useful and in particular reliable method for remediation of contaminated soil and groundwater.

Key words:

Nanoiron particles, injection of nanoparticles, remediation of contamination source zones, transport and targeted deposition of nanoparticles in the subsurface