

Measurement of the anisotropic pore water diffusion in clay samples by NMR diffusometry

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Clays are important minerals for the geohazards such as landslides. The platy grain structure of clays yields strong anisotropy in the transport properties of clay samples. Proton nuclear magnetic resonance (NMR) is a promising tool to measure the diffusion anisotropy of pore water in clay samples non-destructively and non-invasively. The applicability of NMR diffusometry to clay samples is discussed mainly in terms of the preliminary computer simulations (e.g., Fig. 1) using the random walk technique (Nakashima et al., 2008).

Ref: Nakashima et al. (2008) Water Resources Research, vol. 44. <http://onlinelibrary.wiley.com/doi/10.1029/2008WR006853/pdf>

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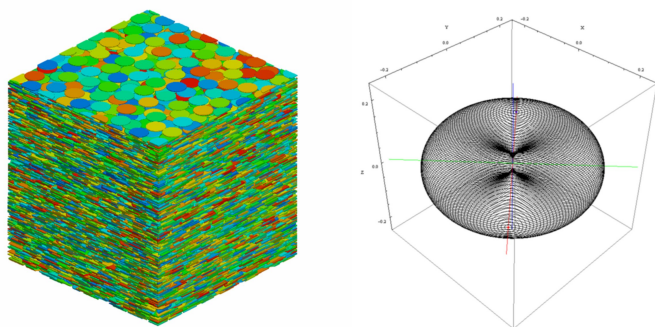


Fig. 1 Left: synthetic image of a sediment of completely parallel clay platelets (porosity 47 vol%). Right: corresponding direction-dependent normalized self-diffusivity of pore water as a wireframe shell having a constriction (not convex ellipsoid).