

NORTHWESTERN UNIVERSITY
Pore-Scale Investigation of Colloid Deposition, Changing Pore
Geometry, Fluid Flow, and Solute Transport in Porous Media
A DISSERTATION
SUBMITTED TO THE GRADUATE SCHOOL
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
for the degree
DOCTOR OF PHILOSOPHY
Field of Civil and Environmental Engineering
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Pore-scale Investigation Of Colloid Deposition Changing Pore Geometry Fluid Flow And Solute Transport In Porous Media

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Summary : Free pore-scale investigation of colloid deposition changing pore geometry fluid flow and solute transport in porous media pdf download - xdmT was combined with lattice boltzmann lb simulations to assess changes in pore-scale flow fields solute transport and dispersion behavior resulting from colloidal deposition in a granular porous medium the detailed structural information obtained from xdmT was used to define internal boundary conditions for simulations of pore water flow and solute transport both with and without colloidal deposits as colloids accumulated in the pore space the permeability decreased the mean tortuosity increased and the tortuosity distribution became multi-modal the colloidal deposits also increased the spatial variation in pore velocities leading to higher dispersion coefficients

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