



Software for fitting and simulating fate and transport of dense colloids and biocolloids in one-dimensional porous media: Re-introducing ColloidFit.

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The present work re-introduces ColloidFit, which is an autonomous, modular, multipurpose fitting software for dense colloid and biocolloid transport phenomena in porous media. The initial version of ColloidFit, introduced by Sim and Chrysikopoulos (1995), was substantially improved and combined with a relatively intuitive and easy to use graphical user interface. The re-introduced ColloidFit can simulate the migration of suspended colloid or biocolloid particles in one-dimensional, water saturated, homogeneous porous media with uniform flow, accounting for non-equilibrium attachment onto the solid matrix, as well as gravitational effects. Furthermore, the improved ColloidFit software employs a variety of non-equilibrium, linear and nonlinear models for the simulation of colloid attachment onto a solid matrix under batch experimental conditions. The re-introduced ColloidFit uses the state of the art fitting software “Pest” to estimate unknown model parameter values, together with their 95% confidence intervals. Pest is a model-independent parameter estimation software capable of adjusting model parameters, so that discrepancies between model-generated data and the corresponding experimental measurements are reduced to a user preselected minimum. The fitting process is graphed and displayed in real time. The user is allowed to overview every step of the fitting progress, and if needed to change the initial parameter values. The re-introduced ColloidFit software is expected to make the fitting process of colloid and biocolloid transport data, just a simple task.