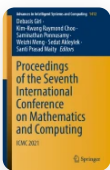


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Simulation of Two-Dimensional Nonlinear Model for Washing of Pulp Fiber Bed Using Quintic Hermite Interpolation Polynomials

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[Satinder pal Kaur](#), [Ajay Kumar Mittal](#) & [Vijay Kumar Kukreja](#)

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Abstract

Mathematical modeling is an area via which researchers can develop strategies for the industries. A lot of work is going on to develop and study the behavior of models related to the pulp and paper industry. The process of removal of impurities present on the particle surface through the introduction of water is covered under displacement washing. A two-dimensional nonlinear model of displacement washing with particle and bulk fluid phase is exhibited in this study. The model equations are solved using the orthogonal collocation finite element method with quintic Hermite interpolation polynomials as a basis function. Further, the numerical results derived are compared with experimental results available in the literature. The comparison with published results proves the efficacy of the method. The behavior of the exit solute concentration curve for parameters such as diffusion, distribution ratio, and bed porosity are also presented.

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