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FEFLOW: Finite Element Modeling of Flow, Mass and Heat Transport in Porous and Fractured Media

By Hans-Jörg G. Diersch



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FEFLOW is an acronym of Finite Element subsurface FLOW simulation system and solves the governing flow, mass and heat transport equations in porous and fractured media by a multidimensional finite element method for complex geometric and parametric situations including variable fluid density, variable saturation, free surface(s), multispecies reaction kinetics, non-isothermal flow and multidiffusive effects. FEFLOW comprises theoretical work, modeling experiences and simulation practice from a period of about 40 years. In this light, the main objective of the present book is to share this achieved level of modeling with all required details of the physical and numerical background with the reader. The book is intended to put advanced theoretical and numerical methods into the hands of modeling practitioners and scientists. It starts with a more general theory for all relevant flow and transport phenomena on the basis of the continuum approach, systematically develops the basic framework for important classes of problems (e.g., multiphase/multispecies non-isothermal flow and transport phenomena, discrete features, aquifer-averaged equations, geothermal processes), introduces finite-element techniques for solving the basic balance equations, in detail discusses advanced numerical algorithms for the resulting nonlinear and linear problems and completes with a number of benchmarks, applications and exercises to illustrate the different types of problems and ways to tackle them successfully (e.g., flow and seepage problems, unsaturated-saturated flow, advective-diffusion transport, saltwater intrusion, geothermal and thermohaline flow).

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Editorial Review

About the Author

Hans-Jörg G. Diersch is the founder of the finite-element simulation system FEFLOW. He is a Professor for flow dynamics. His work encompasses a variety of theoretical and practical investigations with emphasis on variable-density flow, modeling of mass and heat transport processes as well as commercial software developments.

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Lyman Johnson:

This FEFLOW: Finite Element Modeling of Flow, Mass and Heat Transport in Porous and Fractured Media book is not ordinary book, you have it then the world is in your hands. The benefit you have by reading this book is actually information inside this reserve incredible fresh, you will get facts which is getting deeper anyone read a lot of information you will get. This particular FEFLOW: Finite Element Modeling of Flow, Mass and Heat Transport in Porous and Fractured Media without we recognize teach the one who studying it become critical in thinking and analyzing. Don't be worry FEFLOW: Finite Element Modeling of Flow, Mass and Heat Transport in Porous and Fractured Media can bring once you are and not make your handbag space or bookshelves' grow to be full because you can have it in the lovely laptop even cell phone. This FEFLOW: Finite Element Modeling of Flow, Mass and Heat Transport in Porous and also layout, so you will not feel uninterested in reading.

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