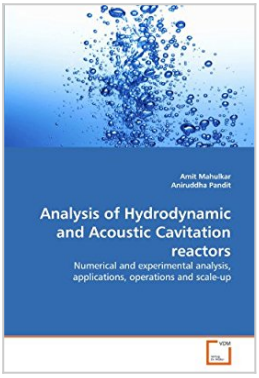

Analysis of Hydrodynamic and Acoustic Cavitation reactors: Numerical and experimental analysis, applications, operations and scale-up

By Amit Mahulkar, Aniruddha Pandit

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Cavitation is an extremely attractive option to improvise the efficacy of conventional unit operation and unit processes, for its ability to provide energy in concentrated form and at the location of transformation. Cavitational reactors have tremendous market potential for applications ranging from synthesis of biodiesel to specialty chemicals and from effluent treatment to process applications like online mixing. This book explains the working of various cavitational reactors and gives guidelines for its efficient operation and scale-up. This book outlines bubble dynamics models, hydrodynamics models (CFD) and kinetic models for hydrodynamic and acoustic cavitational reactors, to quantify the extent of cavitationally induced microbial cell disruption for applications like water disinfection and ballast water treatment, emulsification, nanoparticle synthesis etc. A novel method of steam induced cavitation for further improving the efficacy of the cavitational reactor is presented with ample experimental and numerical analysis. This book is addressed at researchers and practicing engineers who would like to get insight into cavitation reactor operations.

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