

1. Record Nr.	UNINA9910483999503321
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Titolo	Dynamically Structured Flow in Pulsed Fluidised Beds / / by Kaiqiao Wu
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2021
ISBN	3-030-68752-X
Edizione	[1st ed. 2021.]
Descrizione fisica	1 online resource (172 pages)
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5061
Disciplina	660.284292
Soggetti	Chemical engineering Flow chemistry Fluid mechanics Chemical Engineering Flow Chemistry Engineering Fluid Dynamics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction -- Bubbling Properties in Pulsed Fluidised Beds -- A Dynamic Structured Fluidisation Regime to Control the Behaviour of Bubbling Beds -- Pattern Formation Applied as a Tool for Multiphase Flow Model Validation -- Modelling of Pattern Formation: A Periodic Transition Between Solid and Fluid -- The Role of Solid Mechanics in Stabilising Pattern Formation -- Conclusions and Future Work.
Sommario/riassunto	This book analyses the use of a pulsed gas flow to structure bubbling gas-solid fluidised beds and to induce a special fluidisation state, called "dynamically structured flow", as a promising approach to process intensification. It explores the properties of bubbles rising in staggered periodic arrays without direct interaction, assessing their size, separation, and velocity, and explains how a highly uniform, scalable flow offers tight control over the system hydrodynamics. These features are desirable, as they not only bypass engineering challenges occurring in traditional operations, such as maldistribution and non-uniform contact, but also allow to decouple conflicting design objectives, such as mixing and gas-solid contact. The thesis also

presents computational simulations which reveal the periodic transitions of the particulate phase between fluid-like and solid-like behaviour. This book will be of interest to researchers, engineers, and graduate students alike, particularly those working in industrial drying, combustion, and chemical production. .

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