



## Modeling, Analysis, and Optimal Control of Fuel Cell Electrochemistry

By Dhanda, Abhishek

Condition: New. Publisher/Verlag: VDM Verlag Dr. Müller | Application to Polymer Electrolyte Membrane Fuel Cells | This book provides advanced research results on design, modeling and control of fuel cell power systems. It begins with an introduction of fuel cells and their components before elaborating the fundamentals of fuel cell operation and underlying physical principles. It then describes a wide range of experimental and electroanalytical techniques pertinent to fuel cell research along with an in-depth discussion on modeling of electrochemical reactions and the dependence of reaction kinetics on fuel cell catalyst structure. Based on the electrochemical model, optimal control strategies are derived for improving the dynamic performance of fuel cells over a wide operating range. Basic mathematical preliminaries on optimal control design and model-based optimization are adequately explained in the text. The book concludes with a note on practical implementation of proposed controllers on fuel cell power systems where non-linear optimal solutions are integrated with feed-forward, feedback, and adaptive control schemes. This book gives students and researchers a solid understanding of fuel cells, and is an excellent reference on modeling and control of fuel cell power systems. | Format: Paperback | Language/Sprache: english | 246 gr | 176 pp.



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