1. Record Nr. UNINA9910852998903321

Autore	Kumar Anuj
Titolo	Atomically Precise Electrocatalysts for Electrochemical Energy Applications / / edited by Anuj Kumar, Ram K. Gupta
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2024
ISBN	3-031-54622-9
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (VI, 452 p. 141 illus., 138 illus. in color.)
Disciplina	541.372
Soggetti	Renewable energy sources Electrochemistry Catalysis Materials Nanotechnology Renewable Energy Materials Engineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Atomically precise electrocatalysts; Single/Dual/Multi-atom catalysts -- Synthesis and characterization of atomically precise electrocatalysts -- Electrocatalytic properties of atomically precise electrocatalysts -- Electrochemical Energy Conversion and Storage Strategies -- Oxygen Reduction Reaction; Fuel Cells -- Oxygen Evolution Reaction; Water Electrolyzer -- Hydrogen Evolution Reaction; Water Electrolyzer -- Activity descriptors for Atomically Precise OR Electrocatalysts -- Single-atom catalysts for Oxygen Reduction Reaction -- Dual-atom catalysts for Oxygen Reduction Reaction -- Multi-atom catalysts for Oxygen Reduction Reaction -- Activity descriptors for Atomically Precise OER Electrocatalysts -- Single-atom catalysts for Oxygen Evolution Reaction -- Dual-atom catalysts for Oxygen Evolution Reaction -- Multi-atom catalysts for Oxygen Evolution Reaction -- Activity descriptors for Atomically Precise HER - Electrocatalysts.-Single-atom catalysts for Hydrogen Evolution Reaction -- Dual-atom catalysts for Hydrogen Evolution Reaction -- Multi-atom catalysts for Hydrogen Evolution Reaction -- Single-atom catalysts for metal-air batteries -- Dual-atom

	catalysts for metal-air batteries -- Multi-atom catalysts for metal-air batteries -- Single-atom catalysts for metal-sulfur batteries -- Dual-atom catalysts for metal-sulfur batteries -- Multi-atom catalysts for metal-sulfur batteries. .
Sommario/riassunto	This book offers a comprehensive overview of atomically precise electrocatalysts, including single-atom, dual-atom, and multi-atom catalysts, which are considered to be superior electrode materials for fuel cells and water electrolyzers. By presenting a systematic examination of these materials in ascending order of metal atom number, the book provides a deep understanding of their synthesis processes, energy applications, and potential for improving their performance. Unlike any contemporary book on the topic, this book explores the reaction mechanisms and structure-performance relationships in catalytic processes at atomic level. Essentially, by driving the development of fuel cells and water electrocatalyzers, this book helps meet the world's growing energy demands. With its cutting-edge insights, this book is an indispensable resource for researchers, engineers, and students working in the field of renewable energy.