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Nota di contenuto	Emerging Materials and Environment: A Brief Introduction -- A Generalized Force-Modified Potential Energy Surface (G-FMPES) for Mechanochemical Simulations -- Chemometric Modeling of Emerging Materials for the Removal of Environmental Pollutants -- Ionic Liquids and Halloysite Nanotubes: Emerging Environmental chemicals of concern -- New frontiers for heterostructured nanocomposites with interfacial functionalities synthesized via laser ablation synthesis in solution (LASiS) -- Recent mechanistic insights into some enzyme mimetic functions of ceria -- Emerging 2D Materials Based Nanoarchitecture for Water Purification -- Emergent Materials and Processes for Efficient Environmental Per- and Polyfluoroalkyl

Substances Containment -- Life Cycle Considerations for Per- and Polyfluoroalkyl Substances (PFASs) and the Evolution of Society’s Perspective on Their Usage.

Sommario/riassunto

This contributed volume presents chapters integrating experimental and computational advances in materials research and discusses how the potential release of emerging materials would impact the environment. With increasing populations, there is a growing pressure on resources and the environment to provide food, water, and energy. Innovative materials and novel technologies, such as nanocomposite and multifunctional materials, additive manufacturing, and remediation technologies, are constantly being developed to meet these demands. As technologies mature some potentially harmful materials will find their way into the environment. Depending on their environmental persistence, such as “forever chemicals” per- and polyfluoroalkyl substances (PFAS), some of the emerging materials may become a major environmental challenge. This book covers a broad spectrum of topics related to the recent advances and future directions in emerging materials research, molecular simulations, machine learning and QSAR approaches for environmental contaminants, advanced materials for water purification, remediation technologies of PFAS, and life-cycle assessment of materials. It offers an invaluable resource for postgraduate students and researchers in academia, industry, and different laboratories interested in the field.