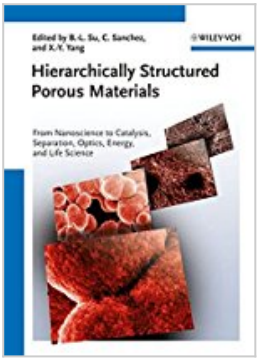

Hierarchically Structured Porous Materials: From Nanoscience to Catalysis, Separation, Optics, Energy, and Life Science

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Hierarchically Structured Porous Materials: From Nanoscience to Catalysis, Separation, Optics, Energy, and Life Science From Wiley-VCH

This first book devoted to this hot field of science covers materials with bimodal, trimodal and multimodal pore size, with an emphasis on the successful design, synthesis and characterization of all kinds of hierarchically porous materials using different synthesis strategies. It details formation mechanisms related to different synthesis strategies while also introducing natural phenomena of hierarchy and perspectives of hierarchical science in polymers, physics, engineering, biology and life science.
Examples are given to illustrate how to design an optimal hierarchically porous material for specific applications ranging from catalysis and separation to biomedicine, photonics, and energy conversion and storage.
With individual chapters written by leading experts, this is the authoritative treatment, serving as an essential reference for researchers and beginners alike.

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Editorial Review

From the Back Cover
This first book devoted to this hot field of science covers materials with bimodal, trimodal and multimodal pore size, with an emphasis on the successful design, synthesis and characterization of all kinds of hierarchically structured porous materials using different synthesis strategies.

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From the contents:
* Insights into hierarchically structured porous materials
* Hierarchy in natural materials
* Hierarchically structured porous materials by dually micellar templating approach
* Colloidal crystal templating approaches to materials with hierarchical porosity
* Templating of macroporous or swollen macrostructured polymers
* Bioinspired approach to synthesizing hierarchical porous materials
* Porous materials by templating of small liquid drops
* Hierarchically porous materials by phase separation: monoliths
* Feature synthesis of hierarchically porous materials
* Integrative chemistry routes toward advanced functional hierarchical foams
* Hierarchically structured porous coatings and membranes
* Self-formation phenomenon to hierarchically structured porous materials
* Auto-generated hierarchical meso-macroporous aluminosilicate materials
* Zeolites with hierarchically porous structure
* Micro-macroporous structured zeolite
* Hierarchically porous materials in catalysis
* Hierarchically structured porous materials: application to separation sciences
* Colloidal photonic crystals: fabrication and applications
* Hierarchically structured porous materials for energy conversion and storage
* Hierarchically structured porous materials - applications in biochemistry
* On the optimal mechanical properties of hierarchical biomaterials
* Concluding remarks

About the Author
Bao-Lian Su is Director of the Research Centre for Nanomaterials Chemistry and of the Laboratory of Inorganic Materials Chemistry at the University of Namur; Vice-Director of State Key Laboratory of Advanced Technology for Materials Synthesis and Processing at the Wuhan University of Technology.

Cl?ment Sanchez obtained his PhD degree from Paris University in 1981 and currently holds a post as Professor of Chemistry of Hybrid Materials at the Coll?ge de France. He is also the Director of the Laboratoire de Chimie de la Mati?re Condens?e de
Paris at the University P. M. Curie.

Xiao-Yu Yang is a Research Fellow of the FNRS (National Foundation of Scientific Research) at the University of Namur (FUNDP) and Secretary-General of International Materials Forum (IMF) and assistant Director of the Laboratory of Living
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