

Engineering Smart and Sustainable Systems Using Artificial Intelligence, Advanced Materials, and Renewable Energies

The book is part of a global scientific dynamic where innovation, sustainability, and technological intelligence converge to address the major challenges of our time. In this context, the Private University of Fès (UPF) stands out as a key player in scientific and technological innovation in Morocco. Through its state-of-the-art research centers, technological platforms, and international collaborations, UPF actively contributes to the development of solutions integrating artificial intelligence, advanced materials, and renewable energies. Among these structures, the Center of Excellence in Batteries, led by the renowned Professor Rachid Yazami, a global pioneer in lithium-ion technology, is a strategic pillar. Under the editorial leadership of Professor Mohammed Ouazzani Jamil, Vice-President of the Private University of Fès, this book brings together contributions from international researchers, engineers, and experts.

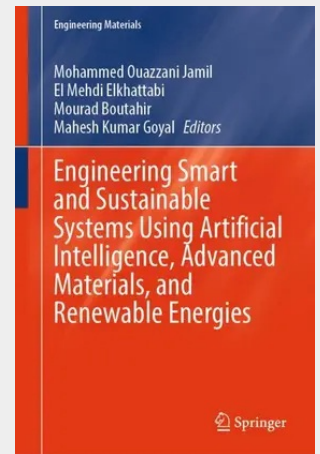
This volume offers a rich and updated overview of advances in the engineering of intelligent and sustainable systems. The chapters address:

- Emerging applications of artificial intelligence in energy and industrial systems;
- Recent developments in advanced materials and their innovative applications;
- Strategies for integrating renewable energies for the design of high-performance systems;
- Major advances in storage technologies related to the work of the Center of Excellence in Batteries;
- Systemic approaches are necessary to meet global sustainability requirements.

We hope this publication becomes an essential reference for all those aspiring to understand, rethink, and shape the smart and sustainable systems of tomorrow.

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