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Special Issue Reprint

Energy Conversion Materials/Devices and Their Applications

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This Reprint highlights recent advances in energy conversion materials and devices that are shaping the next generation of sustainable technologies. As global demands for clean and efficient energy systems continue to rise, researchers are developing innovative materials, architectures, and mechanisms that improve performance, safety, stability, and environmental compatibility. The collected articles offer a broad yet coherent view of these developments, covering progress in high-efficiency batteries, lead-free and solution-processed photovoltaics, electrochromic and optoelectronic devices, and broadband optical materials. Key contributions include strategies for stabilizing lithium metal and high-capacity cathodes, emerging concepts for sodium-ion storage, nanoscale engineering of electrochromic films, and advances in lead-free perovskite solar materials. The Reprint also explores cutting-edge light-emitting technologies and broadband near-infrared glass systems that expand the capabilities of telecommunications and sensing.

Together, these works demonstrate how materials innovation and device engineering can accelerate the transition toward cleaner and smarter energy solutions. This Reprint provides a timely overview for researchers, engineers, and practitioners seeking actionable insights across the rapidly evolving landscape of energy conversion technologies.

