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Sommario/riassunto	The conversion and storage of renewable energy sources is key to the transition from a fossil-fuel-based economy to a low-carbon society. Many new game-changing materials have already impacted our lives and contributed to a reduction in carbon dioxide emissions, such as high-efficiency photovoltaic cells, blue light-emitting diodes, and cathodes for Li-ion batteries. However, new breakthroughs in materials science and technology are required to boost the clean energy transition. All success stories in materials science are built upon a tailored control of the interconnected processes that take place at the nanoscale, such as charge excitation, charge transport and recombination, ionic diffusion, intercalation, and the interfacial transfer of matter and charge. Nanostructured materials, thanks to their ultra-small building blocks and the high interface-to-volume ratio, offer a rich toolbox to scientists that aspire to improve the energy conversion efficiency or the power and energy density of a material. Furthermore, new phenomena arise in nanoparticles, such as surface plasmon resonance, superparamegntism, and exciton confinement. The ten articles published in this Special Issue showcase the different applications of nanomaterials in the field of energy storage and conversion, including electrodes for Li-ion batteries and beyond, photovoltaic materials, pyroelectric energy harvesting, and (photo) catalytic processes.