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Self-Healing Polymeric Hetero-Nano-Structures for Monolithic Quantum Dot Perovskite Tandem Solar Cells

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Deadline for manuscript submissions:
closed (31 December 2022)

Message from the Guest Editors

Photovoltaic perovskite solar cells (PSCs) have been considered the most promising substitutes for high-caliber solar energy harvesting systems. For tandem solar cells, many narrow bandgap semiconductors, such as crystalline silicon (c-Si), Cu(In,Ga)Se, and polymers, are paired to increase efficiency beyond the present Shockley–Queisser limit (>29.5%). Monolithic tandem solar cells are fabricated sequentially on a single substrate with one transparent front electrode and one opaque rear electrode interconnected with an interconnection layer (ICL). The parasitic absorption of indium tin oxide, indium-doped zinc oxide, or gold leads to the loss of short-circuit current density for tandem solar cells. and the sputtering process damages underlying functional layers, reducing the device's fill factor. Additionally, under frequent temperature variations, damaged or cracked solar cells reduce efficiency by deteriorating photon transfer tunneling. This Special Issue invites original and review articles that target self-healing solar cells, e.g., using smart polymeric layers, to overcome the above issues without curtailing efficiency in energy harvesting cells.

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Message from the Editor-in-Chief

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