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Sommario/riassunto	The direct conversion of sunlight into electricity (photovoltaic or PV for short) is evolving rapidly, and is a technology becoming a mainstream clean energy production method. However, to compete with conventional energy production methods using fossil fuels, the conversion efficiency needs to be increased, and the manufacturing cost should be reduced further. Both of these require the improvement of solar energy materials, and the device architectures used for the conversion of light into electrical energy. This Special Issue presents the latest developments in some solar energy materials like Si, CdTe, CIGS, SnS and Perovskites), and the device structures suitable for next generation solar cells. In particular, the progress in graded bandgap multi-layer solar cells are presented in this Special Issue.