Scientific Achievement:
Developed single-step, atmospheric pressure synthesis of single-crystal, one-dimensional nanostructured thin films as absorber material. Developing a new hybrid donor systems for enhanced photon harvesting and minimizing recombination.

Significance and Impact:
Low-cost flexible solid-state solar cells with reasonable efficiencies and capability to perform in low light conditions.

Research Details:
• One-dimensional single-crystal TiO$_2$ nanostructures were synthesized on ITO-coated glass substrates using a single-step aerosol chemical vapor deposition (ACVD) process.
• Molybdenum carbide and iron nitride-based nanostructured counter-electrodes synthesized.
• Structurally modified new BODIPYs with anchoring subunits synthesized to achieve enhanced absorption on TiO$_2$ surfaces.
• Evaluated the photoelectrochemical performance of a photosystem I-based solar cell using nanostructured TiO$_2$ synthesized by the ACVD process.


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