Photothermally-assisted Self-assembly of Nanoridge Structures for Solar Cells

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Self-assembly of Nanoridges for Solar Cells

- **Project Goal**: To develop an assisted bottom-up approach for self-assembly of ordered nanopatterns for light-absorption enhancement in organic photovoltaic devices.

- **Methods**: Using a pre-programmed shape-memory polymer, periodic nanostructures were formed over a large area. The grooved surface enhanced diffuse reflectance up to 90%, which would be a promising candidate for the back-reflector design.

- **Impact**: The proposed approach provides an inexpensive single-step fabrication technique for solar cell applications without the need of photolithography.

(a) (b) (c) (d)

(a) A macroscopic view of the sample. (b) An optical micrograph of the surface. (c) An atomic-force microscopy picture of the surface. (d) A cross-section of the surface.