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Improved power conversion efficiency for dye-sensitized solar cells using a subwavelength-structured antireflective coating

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Highlights

- ▶ Subwavelength-structured nanodome arrays were fabricated on illuminated side of DSSC using colloidal lithography.
- ▶ Antireflection was improved through a graded refractive index constructed on illuminated surface.
- ▶ Light harvesting of DSSC was enhanced as well as power conversion efficiency.

Abstract

Large-scale, subwavelength-structured nanodome arrays were successfully fabricated using simple, scalable bottom-up colloidal (nanosphere) lithography on a glass substrate as an efficient antireflective photoanode for dye-sensitized solar cells (DSSCs). A self-assembled monolayer of close-packed colloidal crystals (silica) was used as a structural template to pattern the two-dimensional subwavelength-structured nanodome arrays, which function as an efficient antireflective coating due to the graded refractive index across the interface between the air and

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