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Visible and near-infrared wavelength-selective dielectric reflectors for light management applications

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Highlights

- Distributed Bragg reflectors composed of TiO_2/SiO_2 films are studied.
- FESEM study evidenced the preparation of periodic layers of TiO_2 and SiO_2 films.
- Longer time aged solution endorsed shifting of reflection band from visible to near-infrared wavelength region.
- FTIR investigation evidenced the characteristic peaks of Ti-O-Ti and Si-O-Si bonds.
- Light propagation behavior can be managed by the spin coating process parameters.

Abstract

Wavelength selective reflectors have been widely used in lightemitting diodes, microcavities, waveguides, solar cells and many more. This paper presents the preparation and study of TiO_2/SiO_2 distributed Bragg reflectors. These multilayer structures were prepared by adopting an easy and cost-effective sol-gel spin coating approach. The prepared samples were examined using