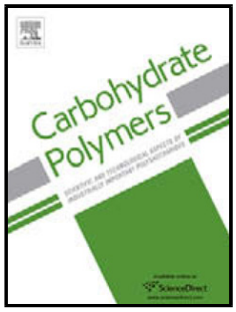

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Relationship between multi-scale structures and properties of photophobic films based on hydroxypropyl methylcellulose and monosodium phosphate

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Highlights:

- The interactions might happen between $H_2PO_4^{-1}$ group and CH, CH_2 and CH_3 group.
- Compactness and smoothness of fractal structures increased after adding NaH_2PO_4.
- The relationship between fractal structures and whiteness was established.

Abstract: Photophobic (white) films were prepared with hydroxypropyl methylcellulose (HPMC) and monosodium phosphate (NaH_2PO_4) to overcome the redox reaction induced by titanium dioxide photocatalysis of HPMC/TiO_2 white film. What's more, HPMC/NaH_2PO_4 white film could overcome the drying temperature dependent property of white films based on HPMC and calcium salts. Attenuated total reflection Fourier transform infrared spectroscopy, wide angel X-ray diffraction, small angle X-ray scattering, scanning electron microscope and