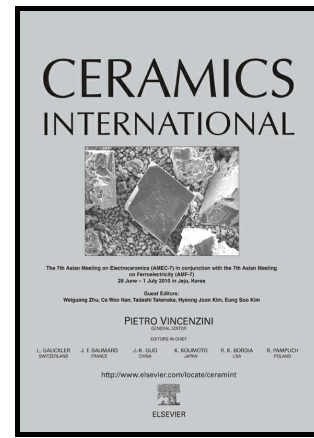


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Preparation and Thermal Reflectivity of Nickel Antimony Titanium Yellow Rutile Coated Hollow Glass Microspheres Composite Pigment

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Abstract

In order to reduce the urban heat island effect, nonwhite lightweight pigments with high near infrared reflectance were studied. Nickel Antimony Titanium Yellow Rutile pigments (TiNiY) coated hollow glass microspheres (HGM@TiNiY) with core-shell structure were prepared by a novel mixing slurry-sintering method. The Reflective property of HGM@TiNiY/SR composite coating prepared by mixing HGM@TiNiY with silicone resin (SR) was investigated by an UV-Vis-NIR spectrum analyzer. The results showed that the size distribution of TiNiY particles was from 150 to 450 nm with an average size of 230 nm, and the binding mode of TiNiY particles with HGM and the formation mechanism of TiNiY Shell were discussed. The UV-Vis-NIR reflectance of HGM@TiNiY/SR coating was not only better than that of others filled with HGM powders or TiNiY powders alone but also higher than that of the coating filled with the mixture of HGM and TiNiY powders at the same volume ratio. A possible mechanism of HGM@TiNiY/SR coating on thermal reflection was discussed. This clearly indicates that the pigment of HGM@TiNiY with core-shell structure could be applied as a good color cool pigment.

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