

NIR reflective properties of $\text{CoTiO}_3/\text{TiO}_2$ complex pigments prepared by spray pyrolysis

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Cobalt titanate has been receiving a great attention due to its potential applications, including catalysts, sensors, and pigments. In particular, CoTiO_3 as a pigment has a green color and good near-infrared (NIR). However, cobalt is expensive and not a rich resource. Therefore, there are efforts to reduce the consumption of cobalt. In this work, $\text{CoTiO}_3/\text{TiO}_2$ complex pigments were synthesized by spray pyrolysis and the optical properties were investigated by changing the molar ratio of Co to Ti and the calcination temperature. To achieve good green color when observed by the naked eye, the Co/Ti ratio was found to be larger than 0.07 and calcined at 800 °C or higher. The $L^*a^*b^*$ color coordinates, band gap, NIR reflectance and microstructure of the resulting powder were studied in detail.

Keywords: CoTiO_3 , Pigment, NIR reflectance, Spray pyrolysis