Synthesis of $(Fe,Cr)_2O_3$ fine powder via spray pyrolysis as high near-infrared reflective black pigment.

황진수, 민병호, 정경열†
공주대학교

Cool pigments have received large attention due to their functions to the energy saving effect in buildings and automobiles. Natural sunlight is known to consist of 5% ultraviolet radiation 400 nm, 43% visible radiation and 52% near-infrared radiation (NIR, 700-2500 nm). Thus, high near-infrared (NIR) reflective materials have been interested as a cool pigment. Black pigments such as carbon black usually absorb NIR reflection as well as visible light. Recently, paint makers have interested in black pigments with high NIR-reflective properties for application to roadway surfaces, building walls, and automobiles. $(Fe,Cr)_2O_3$ is known as black inorganic pigments that can effectively reflect NIR light. Until now, iron chromate has been synthesized by a solid-state reaction. In this work, spray pyrolysis was applied to prepare fine-sized spherical $(Fe,Cr)_2O_3$ powder. The color and NIR reflective properties were investigated by changing the Fe/Cr ratio and the calcination temperature.