

Preparation of sodium, cesium doped WO_3 composite and their application to the NIR shielding film

문경환, 박주현*
중앙대학교
(jpark@cau.ac.kr*)

There has been a growing demand in recent years to filter out the infrared waves of the solar spectrum from housing and automotive windows, in accordance with the worldwide energy-saving and environmental preservation movement. By reducing the near-infrared (NIR) wavelengths between 780 and 2100 nm, it would be possible to moderate skin irritation under the strong summer sun without losing brightness. Additionally, this would help to reduce the energy for air conditioning and thereby decrease the emission of carbon oxides from housings and automobiles. Homogeneous dispersions of reduced tungsten oxide and tungsten bronze nanoparticles with ternary additives Na, Cs have been prepared in the wet process and examined for optical properties. The dispersions of those are found to show a remarkable absorption of near infrared light while retaining a high transmittance of visible light. NIR absorption is considered to arise from the free electron plasmon resonance. This property is highly suitable for solar control filters in automotive and architectural windows. Acknowledge : This work was funded by Korea institute of Industrial Technology(KITECH)(No. k00060053_55505)