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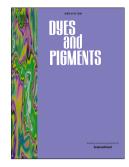
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Environmentally Friendly Orange Pigments Based on Hexagonal Perovskite-Type Compounds and Their High NIR Reflectivity

Byungseo BAE, Naoki TAKEUCHI, Shinji TAMURA, Nobuhito IMANAKA*

Department of Applied Chemistry, Faculty of Engineering, Osaka University, 2-1 Yamadaoka, Suita,

Osaka 565-0871, Japan

* Corresponding author:

Department of Applied Chemistry, Faculty of Engineering, Osaka University, 2-1 Yamadaoka, Suita,

Osaka 565-0871, Japan

Tel.: +81-06-6879-7353, Fax: +81-06-6879-7354

Professor Dr. Nobuhito Imanaka; E-mail: imanaka@chem.eng.osaka-u.ac.jp

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Solid-state reaction method, High NIR reflectance, Energy-saving materials

Abstract

Novel environmentally friendly inorganic orange pigments based on the hexagonal perovskite-type pigment $Sr_4Mn_2(Cu_{1-x}Zn_x)O_9$ ($0 \le x \le 1$) were synthesized and their optical and color properties were determined. Using Zn^{2+} doping (x = 0.5), the optical absorption caused by a ligand-metal charge transfer transition was reduced due to anisotropic lattice distortion, while the optical absorption corresponding to the d-d transition of Cu²⁺ was clearly observed at 670 nm. As a result, the $Sr_4Mn_2(Cu_{0.5}Zn_{0.5})O_9$ sample possessed a brilliant orange color with L^* , a^* , b^* , C, and H°

1

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