

# Accepted Manuscript

Environmentally friendly orange pigments based on hexagonal perovskite-type compounds and their high NIR reflectivity

Byungseo Bae, Naoki Takeuchi, Shinji Tamura, Nobuhito Imanaka



PII: S0143-7208(17)31586-3

DOI: [10.1016/j.dyepig.2017.08.015](https://doi.org/10.1016/j.dyepig.2017.08.015)

Reference: DYPI 6177

To appear in: *Dyes and Pigments*

Received Date: 21 July 2017

Revised Date: 10 August 2017

Accepted Date: 10 August 2017

Please cite this article as: Bae B, Takeuchi N, Tamura S, Imanaka N, Environmentally friendly orange pigments based on hexagonal perovskite-type compounds and their high NIR reflectivity, *Dyes and Pigments* (2017), doi: 10.1016/j.dyepig.2017.08.015.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# 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

**Keywords:** Inorganic orange pigment, Environmentally friendly, Hexagonal perovskite 2H,  
Solid-state reaction method, High NIR reflectance, Energy-saving materials

## Abstract

Novel environmentally friendly inorganic orange pigments based on the hexagonal perovskite-type pigment  $\text{Sr}_4\text{Mn}_2(\text{Cu}_{1-x}\text{Zn}_x)\text{O}_9$  ( $0 \leq x \leq 1$ ) were synthesized and their optical and color properties were determined. Using  $\text{Zn}^{2+}$  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  $\text{Cu}^{2+}$  was clearly observed at 670 nm. As a result, the  $\text{Sr}_4\text{Mn}_2(\text{Cu}_{0.5}\text{Zn}_{0.5})\text{O}_9$  sample possessed a brilliant orange color with  $L^*$ ,  $a^*$ ,  $b^*$ ,  $C$ , and  $H^\circ$

Download English Version:

<https://daneshyari.com/en/article/4765691>

Download Persian Version:

<https://daneshyari.com/article/4765691>

[Daneshyari.com](https://daneshyari.com)