Photocatalytic CO2 Reduction by Cr-substituted Ba2In2O5·(H2O)δ

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Abstract

The development of sustainable and renewable technologies is a crucial challenge in the 21st century. We need ambitious CO2 reduction technology to ensure a stable planet. In this regards, photocatalytic CO2 reduction is a powerful approach to reduce global CO2 emissions simultaneously achieving a sustainable generation of platform chemicals. By developing new photocatalysts, one of the extremely challenging world's problems such as climate, energy, and resources can be tackled. It is well known that photocatalytic reduction of CO2 to CH4 and/or CO is in principle feasible. However, efficiencies are not sufficiently enough for industrial application compared to current photovoltaics (PV) technology that convert solar light into electricity directly. The future of photocatalyst is less predictable than PV, as there exists considerable uncertainty about the best and most scalable device designs and processes [1]. In this talk, we will present a series of novel photocatalysts, Cr-substituted Ba2(In2-xCrx)O5·(H2O)δ. For the firstdu time to our knowledge, we have reported photocatalytic CO2 rection activity with Cr-substituted Ba2(In2-xCrx)O5·(H2O)δ [2,3] and the photoactivity was found to be similar to the state-of-the-art high surface area TiO2 photocatalyst (P-25). The potential of our newly developed photocatalysts will be discussed.

Keywords: *Photocatalytic CO2 reduction, Ba2In2O5, crystal chemistry, optical property*

References

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Biography

Songhak Yoon is currently research associate in Fraunhofer Research Institution Materials Recycling and Resource Strategies IWKS (Fraunhofer-Einrichtung IWKS). He received his PhD at POSTECH in 2007. The overall aim of his research has been to understand how the defects and crystal structure in materials affect optical properties (long persistent phosphors), charge transport and catalytic activity (solar water splitting).