

Electronic Supplementary Information for:

**Improvement of hydrogen evolution under visible light over
 $\text{Zn}_{1-2x}(\text{CuGa})_x\text{Ga}_2\text{S}_4$ photocatalysts by synthesis utilizing a polymerizable
complex method**

Ciro Scheremeta Quintans,^a Hideki Kato,^{*a} Makoto Kobayashi,^a Hiroshi Kaga,^b
Akihide Iwase,^{b,c} Akihiko Kudo^{b,c} and Masato Kakihana^a

^a Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, 2-1-1 Katahira, Aoba-ku, Sendai, Miyagi 980-8577, Japan.

^b Department of Applied Chemistry, Faculty of Science, Tokyo University of Science, 1-3 Kagurazaka, Shinjuku-ku, Tokyo 162-8601, Japan

^c Photocatalysis International Research Center, Research Institute for Science and Technology, Tokyo University of Science, Japan

* E-mail: hkato@tagen.tohoku.ac.jp (H. Kato)

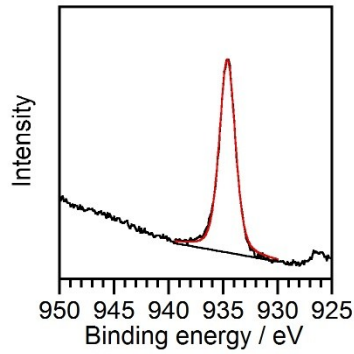


Fig. S1 XPS of Cu 2p for $\text{Zn}_{0.4}(\text{CuGa})_{0.3}\text{Ga}_2\text{S}_4$ prepared by sulfurization of an oxide precursor prepared by the PC method.

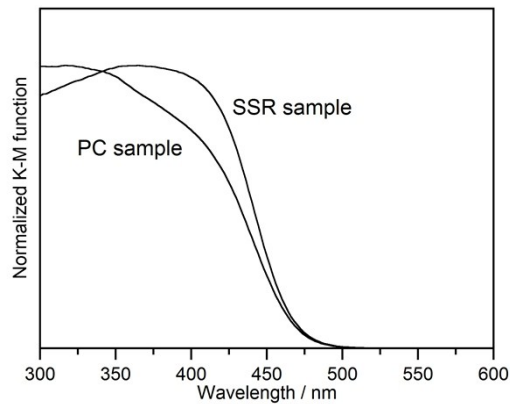


Fig. S2 UV-vis spectra of $\text{Zn}_{0.4}(\text{CuGa})_{0.3}\text{Ga}_2\text{S}_4$ synthesized by PC and SSR methods.

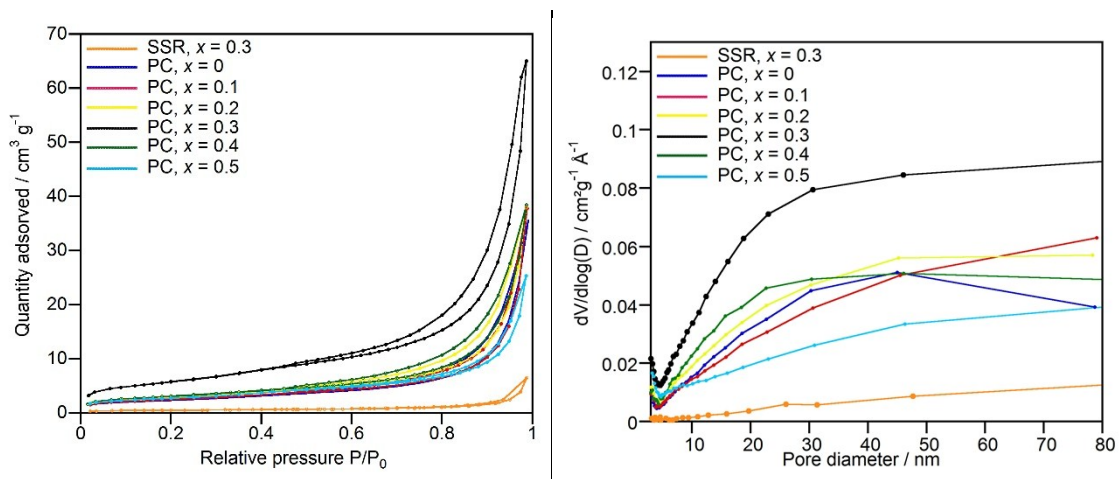


Fig. S3 (left) Nitrogen adsorption-desorption isotherms and (right) pore size distribution for $\text{Zn}_{1-2x}(\text{CuGa})_x\text{Ga}_2\text{S}_4$.