

## 2D/2D ZnO/1T-MoS<sub>2</sub> heterostructure to promote hydrogen evolution via photocatalytic water splitting

강수진, 김정현<sup>1,†</sup>

서울시립대학교; <sup>1</sup>서울시립대학교 화학공학과

(jtkimad@uos.ac.kr<sup>†</sup>)

Among the various hydrogen production technologies, there is a method of producing hydrogen using photocatalysts by water splitting. ZnO has suitable conduction band, valence band and outstanding stability. MoS<sub>2</sub> can be utilized to excellent cocatalyst for hydrogen production. In this work, heterostructure 2D/2D ZnO/1T-MoS<sub>2</sub> photocatalyst was synthesized via a sequential fabrication approach. First, 2D ZnO nanosheets were produced by precipitation methods using zinc precursor and NaOH. On the other side, 2D 1T-MoS<sub>2</sub> nanosheets were also prepared by hydrothermal methods. After that, ZnO/1T-MoS<sub>2</sub> heterostructure was formed by sonochemical method. The weight ratios of ZnO/1T-MoS<sub>2</sub> were controlled by their feedstocks. The synthesized photocatalysts were examined by SEM, TEM, XRD, UV-vis, and the hydrogen production rate was measured by gas chromatography under solar simulator.