

# Facet-, Composition- and Wavelength-depending Photocatalysis of $\text{Ag}_2\text{MoO}_4$

L. Warmuth,<sup>a</sup> C. Ritschel,<sup>a</sup> and Claus Feldmann\*<sup>a</sup>

<sup>a</sup> M. Sc. L. Warmuth, B. Sc. C. Ritschel, Prof. Dr. C. Feldmann

Institut für Anorganische Chemie

Karlsruhe Institute of Technology (KIT)

Engesserstraße 15, D-76131 Karlsruhe (Germany)

E-mail: claus.feldmann@kit.edu

## – Supporting Information –

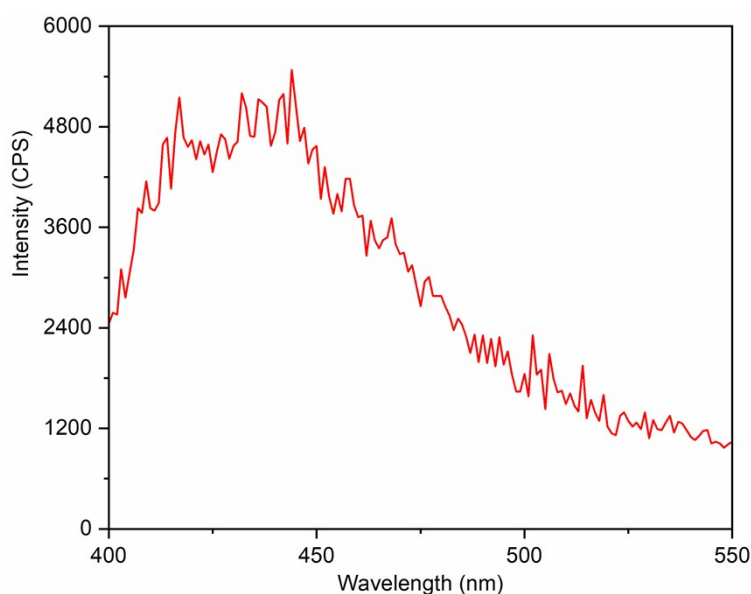
### Content

1. Photoluminescence

2. Morphology of samples before/after photocatalysis

## 1. Photoluminescence

Photoluminescence spectra were recorded to exclude emissive processes as eventual loss process, which could be in competition to photocatalysis. As a representative example,  $\beta$ - $\text{Ag}_2\text{MoO}_4$  cuboctahedra were selected (Figure S1). Here, photoluminescence spectra show extremely weak (maximum at  $5.500 \pm 900$  counts per second) and broad (400-550 nm) emission with high noise ratio and only at extreme conditions. The latter include monochromatized, high-energy excitation (450 W, Xe-lamp) with high-energy UV-light (370 nm) at maximum slit width (5 nm) for both excitation and emission monochromator as well as the use of powder samples. Only with these harsh conditions, weak, broad and non-specific, defect-related emission was observed. The aforementioned conditions are far away from the conditions of photocatalysis, which was performed in aqueous suspensions and with a solar simulator (AM 1.5G solar light). Moreover, no emission was observed at all if standard slit widths (1-2 nm) were applied or if aqueous suspensions were examined (instead of powder samples).

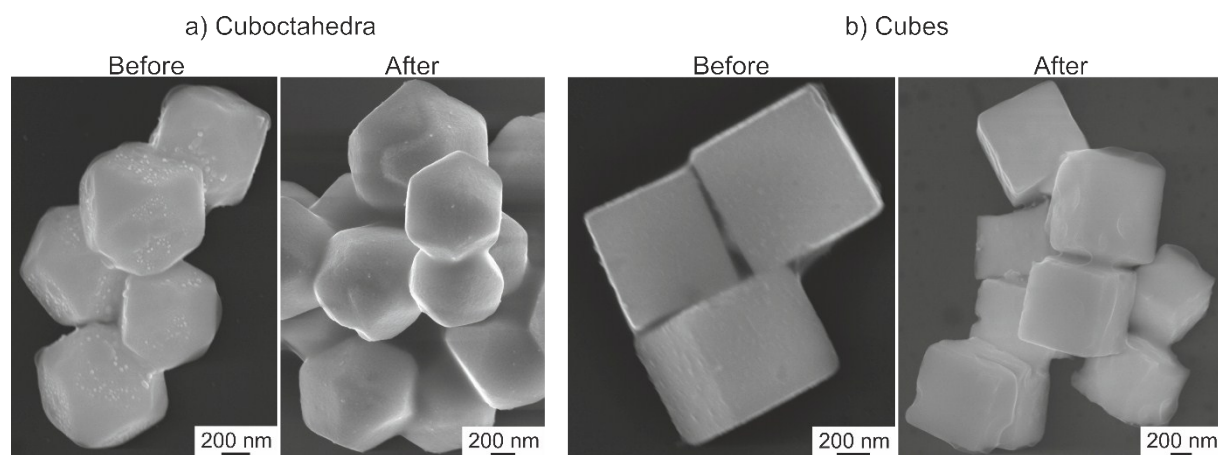


**Figure S1.** Emission of  $\beta$ - $\text{Ag}_2\text{MoO}_4$  with  $\beta$ - $\text{Ag}_2\text{MoO}_4$  cuboctahedra as representative example (powder sample,  $\lambda_{\text{Excitation}}$ : 370 nm; slit width of both excitation and emission monochromator: 5 nm).

## 2. Morphology of samples before/after photocatalysis

The morphology of faceted  $\beta$ - $\text{Ag}_2\text{MoO}_4$  microcrystals before/after photocatalysis was examined for cuboctahedra and cubes (Figure S2). Electron microscopy images do not show

any considerable difference before and after the photocatalytic reaction. Size and faceting of the microcrystals are maintained (Figure S2).



**Figure S2.** Electron microscopy of faceted  $\beta$ - $\text{Ag}_2\text{MoO}_4$  cuboctahedra (a) and cubes (b) before and after the photocatalytic dye degradation.