

Effect of Sb^{5+} codopant ions on the ultraviolet photocatalytic activity of Fe^{3+} -modified anatase

Mikhail V. Korolenko, Pavel B. Fabritchnyi and Mikhail I. Afanasov

X-Ray Diffraction measurements were performed on a powder sample ARL X'TRA Thermo Scientific diffractometer using $\text{Cu } K\alpha$ radiation (wavelength $\lambda = 1.5418 \text{ \AA}$). All studied photocatalysts were found to be anatase type (space group $I4_1/amd$) single-phase polycrystalline materials. An XRD pattern of one of the studied catalysts is shown in Figure S1.

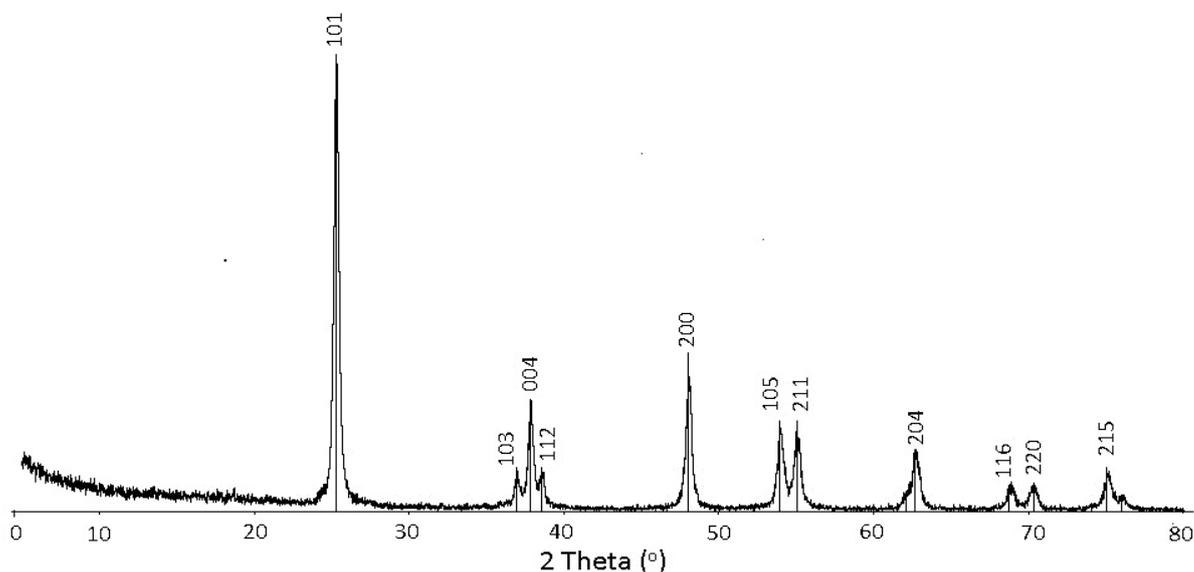


Figure S1 XRD pattern of the sample $(0.6 \text{ at\% } \text{Fe}^{3+} + 0.6 \text{ at\% } \text{Sb}^{5+})\text{:TiO}_2$.

Their specific surface area S_{BET} determined by the BET method were found to be $57 \pm 1 \text{ m}^2 \text{ g}^{-1}$ and virtually not affected by the presence of the dopants used.

^{57}Fe Mössbauer spectra were recorded at room temperature on an electromechanical MS-1104 spectrometer operating in the constant acceleration mode with a $^{57}\text{Co}(\text{Rh})$ source. All of the studied catalysts were enriched up to 10% in the Mössbauer active isotope ^{57}Fe . The spectra were analyzed by a routine least-square program, the experimental isomer shift δ values being quoted with respect to natural iron foil at room temperature.