

5th World Congress on

CATALYSIS AND CHEMICAL ENGINEERING

September 05-06, 2018 Tokyo, Japan

Characterization of Bi or Zr doped F-S-TiO₂/SiO₂ catalysts and their simulant and natural sunlight photoalytic activities for degradation of organic compounds in acrylonitrile industrial wastewater**Feng Ouyang**

Harbin Institute of Technology, China

The F-S-Bi-TiO₂/SiO₂ and F-S-Zr-TiO₂/SiO₂ photocatalysts were prepared by sol-gel method to degradate organic pollutants in acrylonitrile industrial wastewater. The catalysts activity evaluation showed Chemical Oxygen Demand (COD) in the wastewater decreased from 88-150 mg.L⁻¹ to 20-30 mg.L⁻¹ after reaction for 4 h under simulant sunlight irradiation, and COD decreased from 88.36 mg.L⁻¹ to 38 and 50 mg.L⁻¹ after reaction for 6 h under natural sunlight with F-S-Bi-TiO₂/SiO₂ and F-S-Zr-TiO₂/SiO₂ catalysts, respectively, to reach country emission standard. It also was confirmed COD can reach to be close to zero when reaction time prolonged. The differece of more than 4 times higher reaction activities between catalysts having SiO₂ and without SiO₂ confirmed effects of high disperion of SiO₂. It was demonstrated Zr play a important role in photocatalytic stability. From TEM and XRD results we have found that higher activity of Bi doped catalyst was related to nanoparticals sizes of the catalysts. We also observed by TEM results (1) defects and particle edge do not affect crystal face grouth derection; (2) The atoms in a face interaction with atoms to form another face with an angle, the package morphology form is a type of speical form, in which the lattice face direction alter constantly. The TEM results indicated that samples without silica supported, F-S-Bi-TiO₂ particles were spherical and F-S-Zr-TiO₂ particles were cube and rod. The rod was generated by ZrO₂ lattice insertion.

Biography

Feng Ouyang has completed his PhD at 1997 from Tokyo Institute of Technology and He has long been engaged in catalyst synthesis and catalytic performance research, and has extensive experience in catalyst synthesis. He has published more than 80 papers in core journals at home and abroad, The paper is mainly published in the journals of Royal Chemistry and the internationally renowned ELSE-VIER. He was nominated for the 2015 Eni Award and won the 2014 Science Chinese annual personage Award.

ouyangfh@hit.edu.cn

Notes: