Rong Chen, J Chemical Sci 2018, Volume: 9
DOI: 10.4172/2150-3494-C4-026

5th International Conference on

Organic and Inorganic Chemistry

July 12-13, 2018 | Paris, France

Crystal defect mediation for photocatalytic molecular oxygen activation and application

Rong Chen
Wuhan Institute of Technology, China

The crystal defect is the region of parts of atoms being grown out of the periodic lattice structures peculiar to the crystal due to the external environment as it grows. For semiconductor materials, proper amount of crystal defects could greatly improve the photoelectric properties of materials, thus improving their catalytic activities. In this work, different crystal defects were successfully fabricated in bismuth-related nanomaterials by changing the reaction conditions, which realized the regulation of the activation of molecular oxygen, thus producing different reactive oxygen species (ROS). For example, the Z-scheme $BiO_{1-X}Br/Bi_2O_2CO_3$ photocatalytic system with rich in oxygen defects, Ce-doped Bi_2MoO_6 system, Bi-loaded $BiPO_{4-X}$ system and Br-O-Bi ternary defects cluster system. The construction of crystal defects in bismuth-related materials effectively improved the photocatalytic performance and showed a great potential in the application of the organic pollutants degradation and organic synthesis. The mechanism of the enhanced photocatalytic performance was also elucidated in depth.

Biography

Rong Chen has received his PhD in Inorganic Chemistry from the University of Hong Kong in the fields of Biological Inorganic Chemistry. Following a two-year Research Associate appointment, working at the University of Hong Kong, he has accepted a position as Professor of Applied Chemistry at Wuhan Institute of Technology. He is also the Dean of School of Chemistry and Environmental Engineering (2014-2017) at Wuhan Institute of Technology. His current research interest involves the development of novel functional nanomaterials with controllable sizes, unusual morphologies and interesting architectures that give rise to desirable properties and potential applications in environmental photocatalysis, water treatment, gas-phase catalysis, gas-sensors, antibacterial agents, etc.

rchenhku@hotmail.com

Notes: