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PII: S0920-5861(18)30001-4
DOI: https://doi.org/10.1016/j.cattod.2018.01.001
Reference: CATTOD 11191

To appear in: *Catalysis Today*

Received date: 17-8-2017
Revised date: 7-12-2017
Accepted date: 2-1-2018

Please cite this article as: Haruna Hori, Mai Takashima, Mai Takase, Bunsho Ohtani, Kinetic analysis supporting multielectron reduction of oxygen in bismuth tungstate-photocatalyzed oxidation of organic compounds, Catalysis Today https://doi.org/10.1016/j.cattod.2018.01.001

Kinetic analysis supporting multielectron reduction of oxygen in bismuth tungstate-photocatalyzed oxidation of organic compounds

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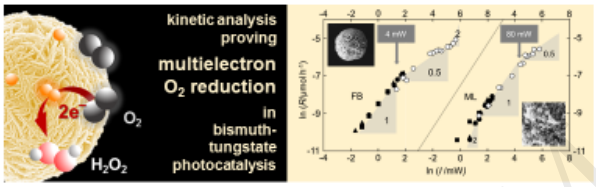
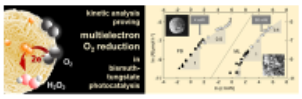
Graphical abstract





Highlights

- Multielectron oxygen reduction (MOR) in Bi_2WO_6 photocatalysis is proved kinetically.
- Bi(tri)modal light-intensity dependences were observed for both large and small Bi_2WO_6.
- The larger the BWO particle size is, the higher the probability of MOR becomes.

ABSTRACT

Light-intensity dependence of the rate of carbon-dioxide liberation in the photocatalytic decomposition of acetic acid by bismuth tungstate particles suspended in an aqueous solution under aerobic conditions was measured by monochromatic photoirradiation using a monochromator (lower