

MS14-P27 | DOPED SINGLE CRYSTAL TiO₂ SERIES PRODUCTS BY MOLTEN SALT METHOD USED AS PHOTOCATALYTIC MATERIALS

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Doped single crystal TiO₂ (DSCT) is a promising material among the various photocatalytic catalysts. Series of DSCT, such as N doped, N, F doped, and N, B doped DSCT, have been prepared by molten salt method (MSM) using mixed nitrates, like NaNO₃ and KNO₃. The mixed nitrates can not only be used as a morphology modifier to form a single-crystal-like structure of TiO₂ in the sample, but also can be used as a synergistic doping agent. As a result, the doping nitrogen content in the DSCT samples can be improved and adjusted easily because of the adding of the mixed nitrates in the calcination process of the MSM method, when compared with using urea as a single nitrogen doping source. The as prepared DSCT materials, such as N-TiO₂, N, F-TiO₂, N, B-TiO₂, etc., all have an enhanced photocatalytic activity compared with the samples without the molten salt process.

[1] Hamukwaya L., Zengying Zhao*, Enhanced Photocatalytic Activity of B, N-Codoped TiO₂ by a New Molten Nitrate Process, *J. Nanosci. Nanotech.*, 2019, 19(2): 839-849.

[2] Zengying Zhao*, Molten-salt fabrication of (N,F)-codoped single-crystal-like titania with high exposure of (001) crystal facet for highly efficient degradation of methylene blue under visible light irradiation, *J. Mater. Res.*, 2018, 33(10): 1411-1421.

[3] Chenxi Li, Zengying Zhao*, Enhanced visible photocatalytic activity of nitrogen doped singlecrystal-like TiO₂ by synergistic treatment with urea and mixed nitrates. *J. Mater. Res.*, 2017, (32): 737-747.