

Supporting Information

Fast and deep oxidative desulfurization of dibenzothiophene with catalysts of MoO₃-TiO₂@MCM-22 featuring adjustable Lewis and Brønsted acid sites

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The Brønsted and Lewis acid sites of the samples were determined by FT-IR spectra with pyridine as the probe molecule (Py-FTIR) using a PE Frontier FT-IR Spectrometer. Prior to analysis, approximately 25 mg of the catalysts was pressed into a 13 mm self-supported wafer and activated in the IR cell at 623 K for 2.0 h at 10^{-2} Pa. Then, it was cooled to room temperature, the sample was exposed to pyridine vapor under vacuum for 0.5 h followed by evacuation of excess pyridine for 0.5 h. Then, the cell was heated to 473 K at a rate of 10 K min^{-1} and under this temperature for 1.0 h to desorb physisorbed pyridine.

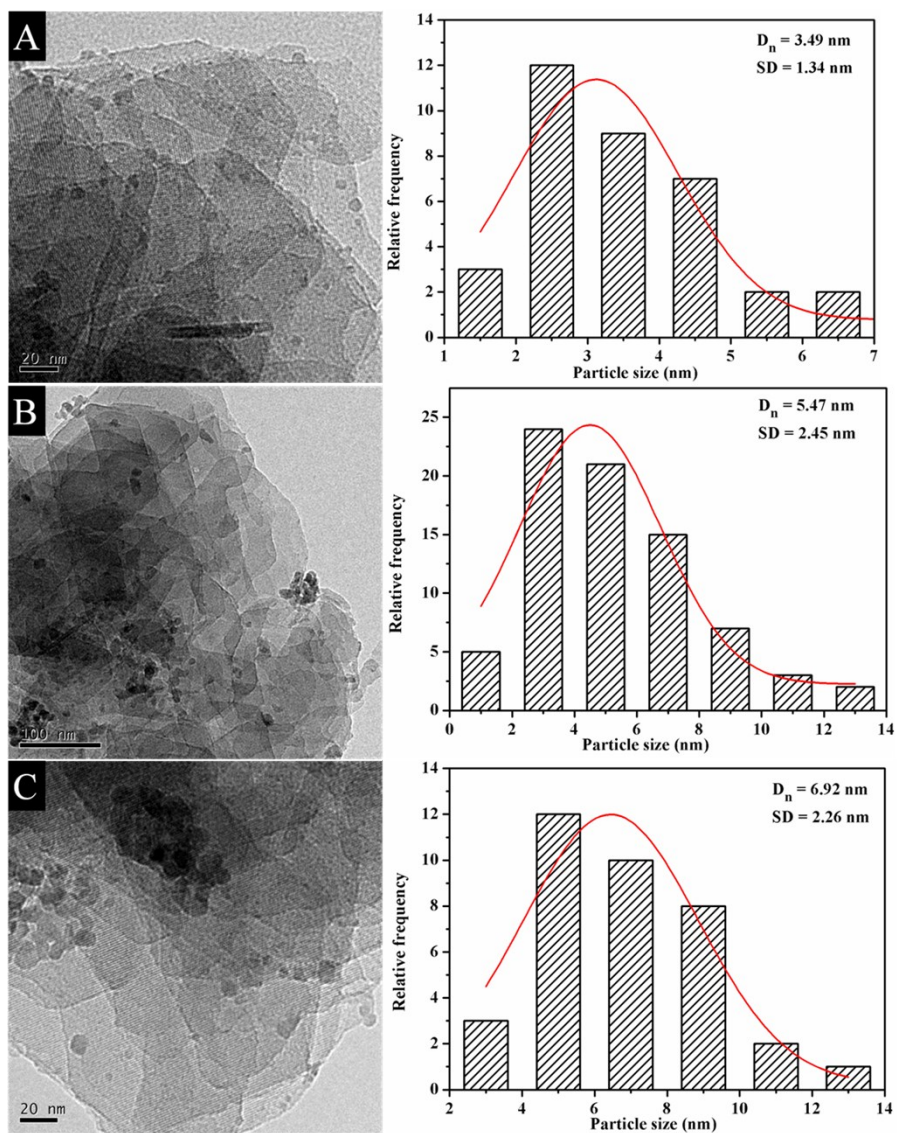


Fig. S1. TEM images of (A) MT-0:5, (B) MT-1:4 and (C) MT-5:0 with the corresponding particle size distribution.

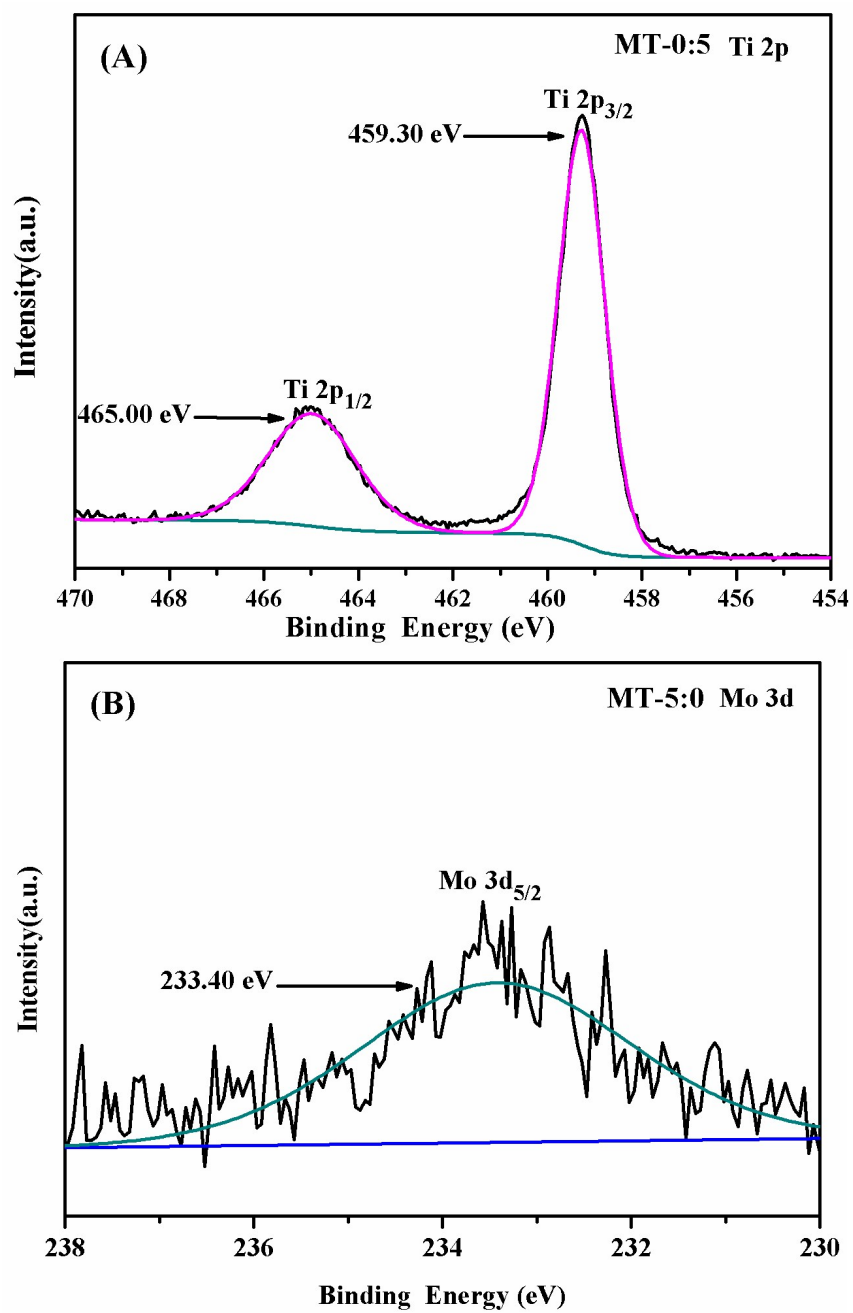


Fig. S2. High resolution XPS spectrum of (A) Ti 2p of MT-0:5, (B) Mo 3d of MT-5:0.

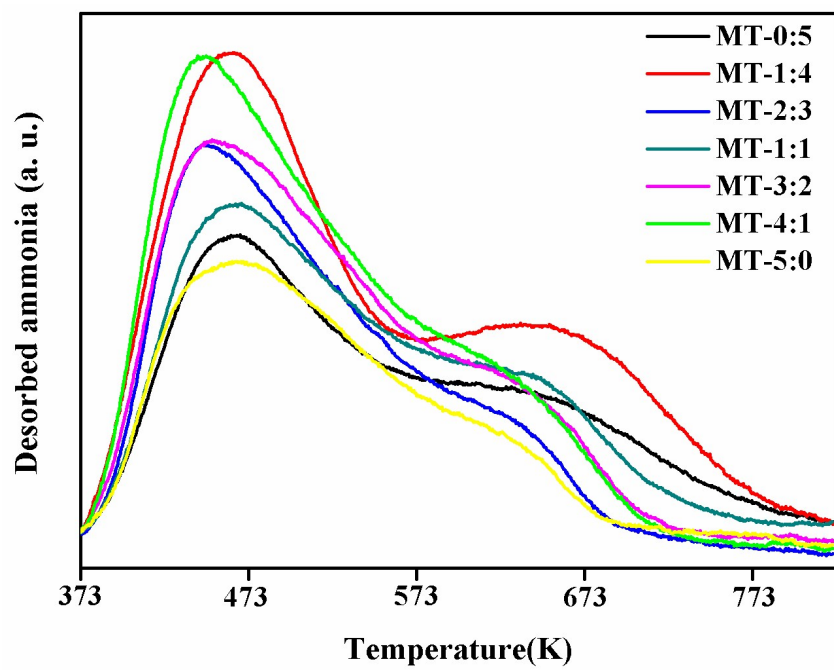


Fig. S3. NH₃-TPD profiles of the as-prepared catalysts.