

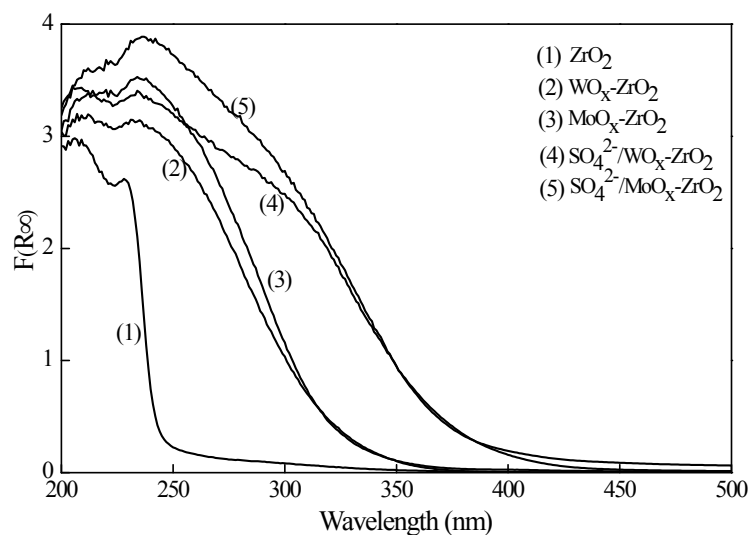


Fig. 1. UV-vis DRS of different catalysts

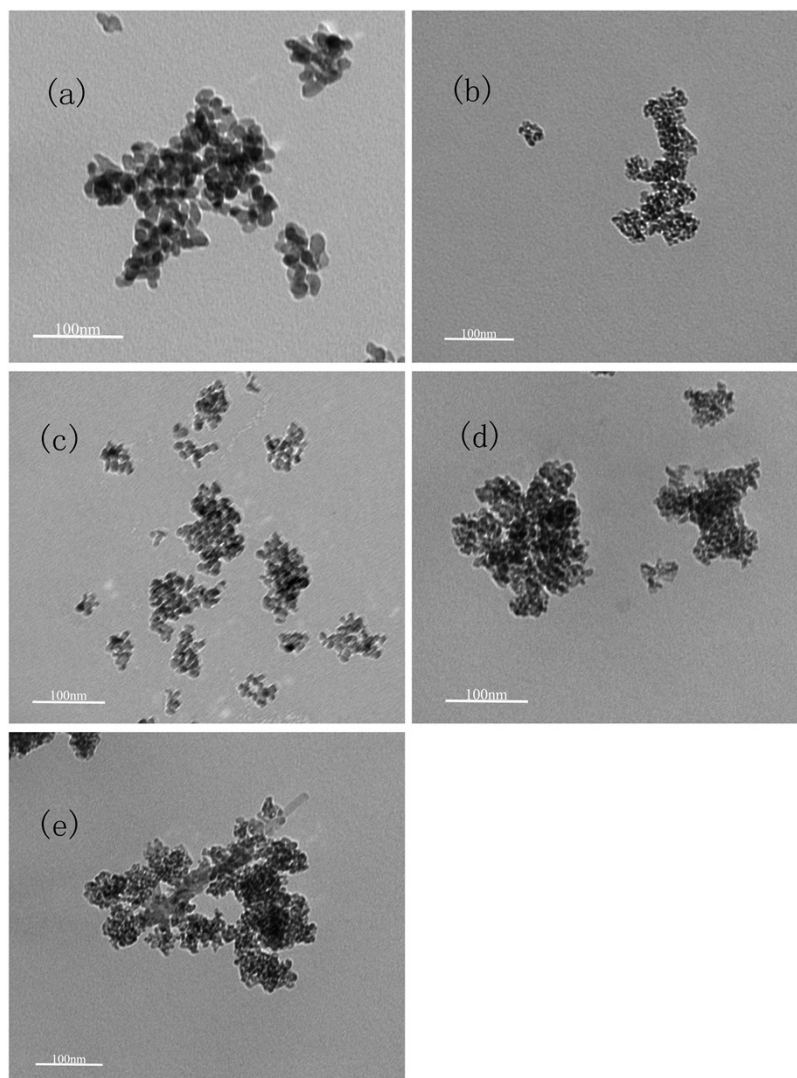


Fig. 2. TEM images of (a) ZrO_2 , (b) WO_x/ZrO_2 , (c) MoO_x/ZrO_2 , (d) SO_4^{2-}/WO_x-ZrO_2 and (e) SO_4^{2-}/MoO_x-ZrO_2

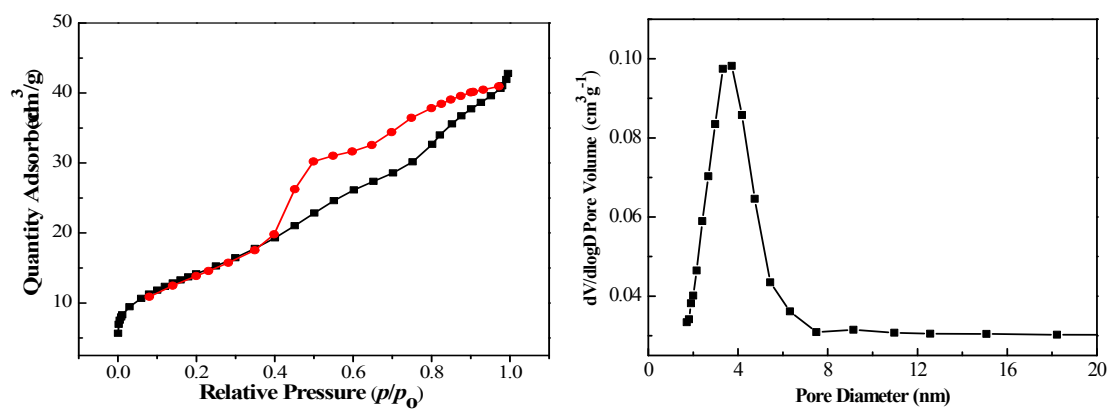


Fig.3. The BET of ZrO_2

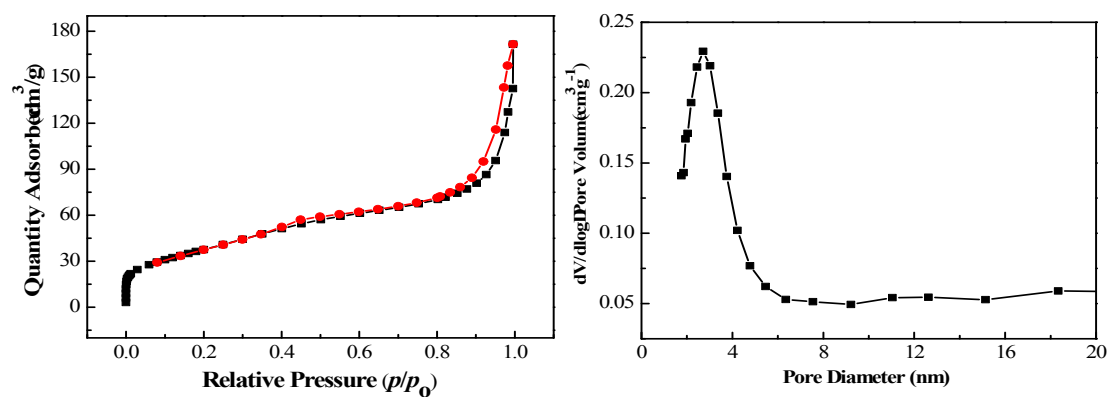


Fig.4. The BET of $\text{WO}_x\text{-ZrO}_2$

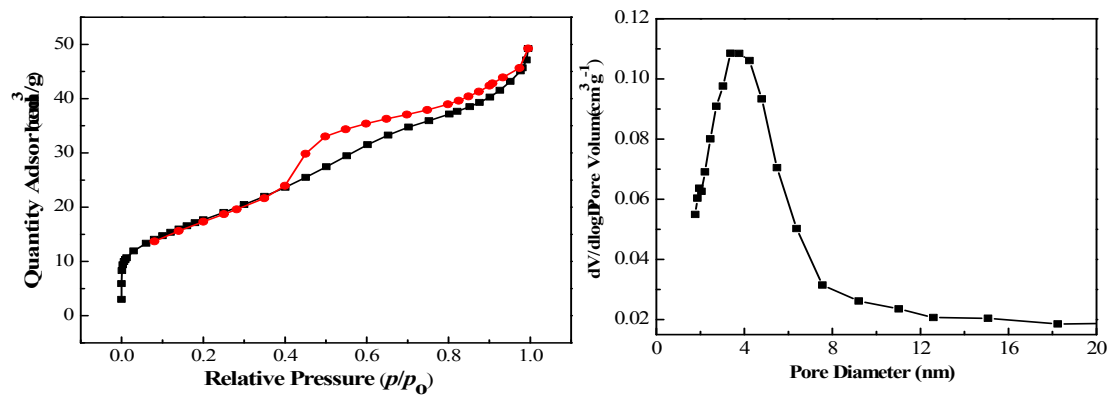


Fig.5. The BET of $\text{MoO}_x\text{-ZrO}_2$

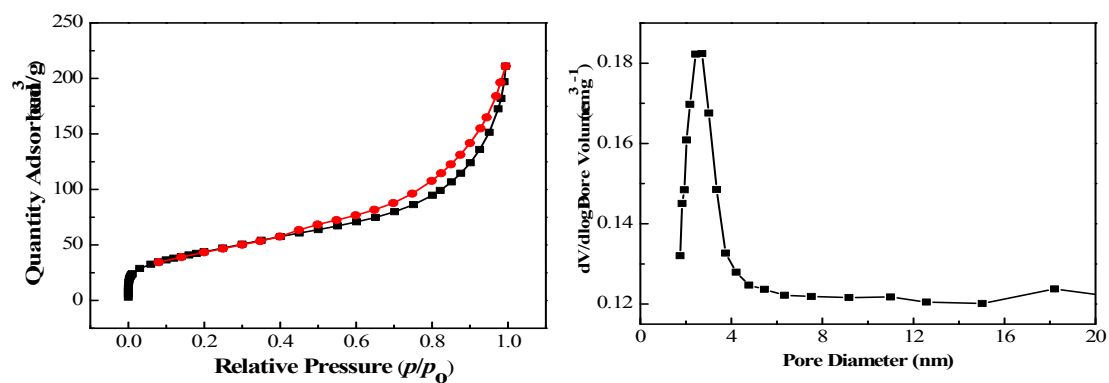


Fig.6. The BET of $\text{SO}_4^{2-}/\text{WO}_x\text{-ZrO}_2$

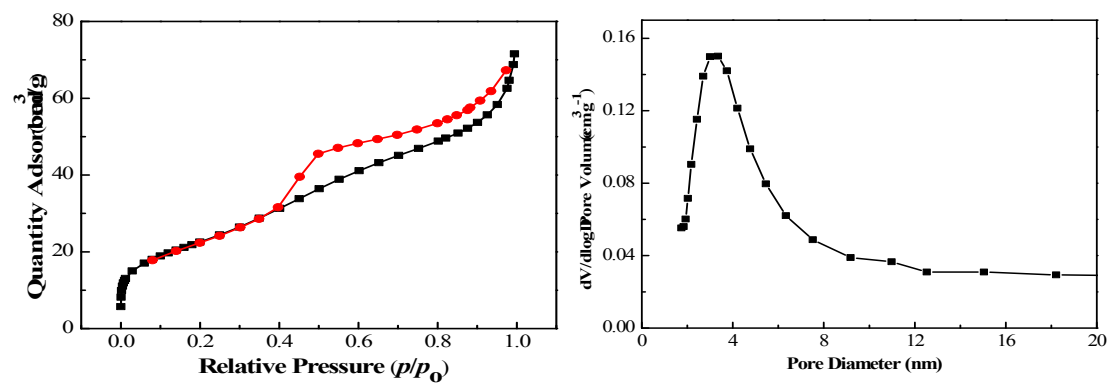


Fig.7. The BET of $\text{SO}_4^{2-}/\text{MoO}_x\text{-ZrO}_2$