

Preparation of Molybdenum Disulfide Nanocrystals and SERS

Performance

Xu Shiyu

Email address of the author: 2079997472@qq.com

(School of Chemistry and Chemical Engineering, Huangshan University)

Abstract: In this paper, molybdenum disulfide was prepared from ammonium sulfide and ammonium sulfide and ammonium para-molybdate by simple and mild reaction. The effects of the amount of ammonium paramolybdate and the ratio of ammonia water to deionized water on the particle size and morphology of nano-molybdenum disulfide were investigated, and the structure of molybdenum disulfide was characterized by FTIR, Raman and X-ray diffraction. The experimental results show that the best process parameters for the synthesis of molybdenum disulfide nanocrystals are temperature of 85 °C, the ratio sulphide ammonia to ammonia of 23.75 mL:5 mL, the concentration of 0.05 mol/L, 20 mL of the dosage ammonium para-molybdate, and 4 h of the reaction time.

Keywords: MoS₂; Nanocrystal; Particle size; Controllable synthesis; Surface-enhanced Raman scattering