

Nano-sized additive synthesis for lubricant oils and compatibility tests with after-treatment catalysts

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Description

Molybdenum sulfide nanoparticles have been successfully obtained, for lubricant applications, by means of a wet chemical synthesis in an aqueous solution employing ammonium molybdate, citric acid and ammonium sulfide as the reactants. Some molybdenum-citrate complexes were formed and they reacted with the ammonium sulfide to form MoS₂ nanoparticles. Mo: citrate molar ratio was identified as being the most relevant of the synthesis parameters that affected the phase and morphology of the final products. The optimized nanopowders were softly agglomerated and amorphous, with a mean size of the primary particles of about 30 nm. The compatibility between the thus obtained MoS₂ nanopowders and some commercial after-treatment catalysts for diesel vehicle engines was tested. Diesel oxidation, soot combustion and ammonia-SCR de-NO_x catalysts were considered as were the possible effects on ...