



INVESTIGATION OF EFFECTIVE PARAMETERS ON PRODUCTION OF OXALIC ACID FROM WASTEPAPER BY NITRIC ACID OXIDATION USING NANOPARTICLES OF V₂O₅ IN A SEMI-INDUSTRIAL SYSTEM

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Oxalic acid, also known as ethanedioic acid, and its compounds have widespread industrial applications in several fields such as textiles, tanning, oil refining, catalysts, pharmaceuticals, dyes, explosives, straw bleaching, printing, marble polishing, and metal and cloth cleaning. Production of oxalic acid from wastepaper was developed in a semi-industrial system is studied. For reach this purpose, first semi-industrial system was designed. Nitrogen oxides formed from this system were recovered absorption column to produce of nitric acid. A good theoretical yield was obtained by using the nanoparticles of V₂O₅. Parameters affecting the reaction were determined to be, the time of reaction, amount of raw material (wastepaper), rate of acid sulfuric concentration/ amount of wastepaper and rate of catalyst (nanoparticles of V₂O₅) to amount of wastepaper. Our results showed that the optimized amounts for these parameters are 8 hours, 90 grams of raw material, 1.2 and 0.9, respectively. This novel way is of significant important from the green chemistry and environmental point of view; because, wastepaper is a raw material for production of a useful product and it was possible to recover NO_x and to prevent air pollution. Meanwhile, it was possible to reduce the unit cost of reactant for oxalic acid production.