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Synthesis of Benzyl Phenyl Sulfoxide from Benzyl Phenyl Sulphide using $[Fe(Phen)_3]^{3+}$By Kinetic Method

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Abstract : The present work is on the selective synthesise of benzyl phenyl sulfoxide from benzyl phenyl sulfide without formation of sulfone using $[Fe(Phen)_3]^{3+}$ as oxidant. Usually oxidation of sulphides produces mixture of sulfoxideandsulfone. But in this method only sulfoxide is identified as the product without further oxidation to sulfone. Benzyl phenyl sulfide (BPS) has been taken as a reactant and $[Fe(Phen)_3]^{3+}$ as oxidant. The reaction was carried out at a p^H of 4-5 in aqueous methanol medium. The yield of the product sulfoxide formed was studied by varying the concentration of BPS, $[Fe(Phen)_3]^{3+}$, Temperature, p^H and solvent composition. The optimum conditions for the maximum yield of sulfoxide. It has been observed that one mole of benzyl phenyl sulfide consumed two moles of $[Fe(phen)_3]^{3+}$.[1-4] The maximum yield of sulfoxide achieved in the present study was approximately 92% while sulfone formation being only 2 % confirming selective oxidation of sulfoxide. The purification of the product performed using silica gel column chromatography with EtOAc/n-hexane (1/10). The product sulfoxide was characterized by IR and ^{1}H-NMR and GC-MS studies.

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