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Simple and efficient oxidation of thiols to disulfides using SnO₂ nanostructures

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Disulfides are the key component of organic and bioorganic process such as disulfide bond formation on peptides, control cellular redox potential in biological systems and they are used as protecting agent of thiols under oxidative condition. The most important method of producing disulfides is the oxidation of thiols. A broad range of reagent and catalysts are used for oxidation of thiols to disulfides like molecular oxygen, metal oxides, nitric oxides, halogens, sodium perborate and DMSO. Tin oxide is a metal oxide that is widely used in different areas like electrode material, a transparent electrode, glass sensing electrode and they are used as hydrogen, carbon monoxide, hydrocarbon and alcohol sensor. In this work SnO₂ nanostructures were synthesized by simple precipitation method by adding ammonia directly to SnCl₂ solution and it was used as catalyst for oxidation of thiol derivatives to disulfides. It was a selective and highly efficient catalyst. SnO₂ nanostructures were characterized by XRD and SEM and products of thiol oxidation were identified by GC-mass spectroscopy.

Biography

Rahmatollah Rahimi has completed his PhD at Howard University (USA). He has been now serving as a full Professor in the Department of Chemistry, Iran University of Science and Technology. He has published about 90 papers in reputed journals.

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