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Nano SnO₂/TiO₂ Composite – Highly efficient catalyst for the synthesis of 1,3,5-substituted pyrazoles.

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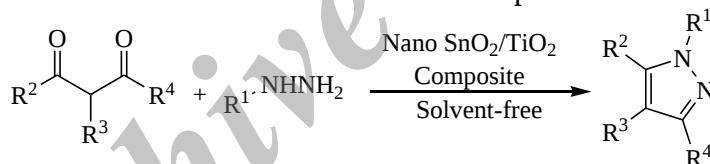
Pyrazole derivatives have a wide range of biological activities. They can be used as antipyretic, gastric secretion stimulatory, anti-rheumatoid arthritis, antibacterial, anticonvulsant, antitumor, insecticides, antimicrobial, antiviral, antifungal ant filarial agents, and anti-inflammatory [1]. They also serve as herbicides, fungicides, pesticides, dyestuffs, antidepressant [2], and antipsychotic [3].

Catalytic Properties of SnO₂/TiO₂ Compositions in Total Methane Oxidation [4], Degradation of 4-chlorophenol [5], and photo catalytic degradation of methyl orange [6].

In this investigation we report the formation of the Nano SnO₂/TiO₂ Composite by sol-gel method by hydrolysis of Tin(IV) chloride and Titanium(IV) chloride at room temperature in the present of Polyethylene glycol 200, NH(C₂H₄OH)₂ and distilled water.

The reported protocol for the synthesis of pyrazole derivatives is the mixing of 1,3-diketone, hydrazine derivatives and Nano SnO₂/TiO₂ Composite was heated.

The FT-IR, ¹H-NMR, ¹³C-NMR spectra and elemental analysis confirm the structure of compounds. The SEM image shows that the oxide powder is of an equable distribution except for a few aggregated particulates. The average grain size calculated by proportion of the photograph is about 40-50 nm, which is uniform with the result of the XRD patterns.



References

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