

## Efficient Hydrosilylation of Functionalized Alkenes via Heterogeneous Zinc Oxide Nanoparticle Catalysis

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**Abstract :** Non-precious metals such as zinc, copper, iron, and nickel are promising hydrosilylation catalysts due to their abundance, affordability, and low toxicity. This study focuses on the preparation of zinc nanoparticles using a simple, scalable method. Advanced techniques such as X-ray diffraction (XRD) and transmission electron microscopy (TEM) are used to characterize these catalysts, revealing their crystal structure and morphology. ZnO nanoparticles demonstrate high efficiency and selectivity in hydrosilylation reactions, producing silylated products. These results highlight the potential of ZnO nanocatalysts for advanced chemical transformations and practical applications in various industrial fields.

**Keywords :** nanoparticles, hydrosilylation, catalysts, non-precious metal

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