

# Nano-structured catalysts in Heterogeneous Catalysis

## *Team Members*

Badal Bansal-2022uch1213

Shashank Rathour-2022uch1221

Shashank Dubey-2022uch1222

Deepak Sharma- 2022uch1208

## **ABSTRACT:**

As the world is at present confronting tremendous issues concerning the atmosphere, energy, and the environment, catalysis innovations have all the earmarks of being getting critical to energy, synthesis process, and environmental areas. Nanostructured catalysts have emerged as a pivotal advancement in heterogeneous catalysis, significantly enhancing reaction efficiency and selectivity. The high surface area-to-volume ratio characteristic of nanostructured materials facilitates increased active site availability, allowing for improved reactant interaction and conversion rates. Research areas such as Nanotoxicology, Nanomedicine, Nanoelectronics have a wide scope which make nanoparticle study crucial. Undoubtedly, the utilization of nanomaterials in catalysis and, all the more especially, inorganic nanoparticles has pulled in many research attempts over the globe to create imaginative and greener conventions. These nanoparticles can be used as the catalyst or as mediator and can encourage the reactant procedure in new medium such as, water. Besides, attributable to their little size and expanded surface area, nano-catalysts have obviously risen as offering an interesting candidate at the interface among homogeneous and heterogeneous catalysis, taking into consideration an expanded response rate. Along these lines, in this pursuit for ecofriendly and more affordable catalyst, nano-catalysis is turning into a significant field in science, which is applied broadly in the academics and industrial areas. This brief review principally centered around portraying the major comprehension of nano-catalysis, how remarkable catalytic property and other explicit properties of nanomaterials rely upon its size and structure at the nano level.