Novelty of the Work

- Sustainable heterogeneous catalysts based on phosphomolybdic acid with excellent activity and TON were designed as an alternative to other environmentally hazardous catalysts for hydrogenation reactions.
- For the first time, phosphomolybdic acid was utilized as a stabilizing agent for transition metals (Ni and Pd).
- The method for in-situ formation of Ni nanoparticles stabilized by phosphomolybdic acid was instituted for the first time.
- Development of highly dispersed Pd Single Atom Site catalyst was accomplished and utilized for industrially important tandem Suzuki-Miyara cross-coupling/nitro hydrogenation reaction.