NEW COPPER-CONTAINING CATALYSTS BASED ON FUNCTIONALIZED SILICAGEL FOR FLOW MODE CATALYSIS

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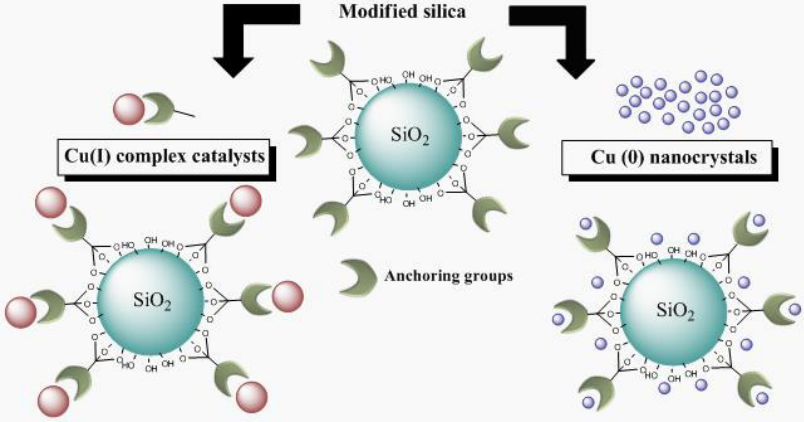
For many years, chemistry of nanomaterials has been a rapidly developing area. Nanoparticles and metal complexes attached to a carrier attract considerable interest because of its unique properties. Recently, the discovery of mesoporous silicas, such as silicagels, M-41s and SBA-15 has stimulated intensive studies of material science in the chemistry which have potential applications in catalysis, selective adsorbents, medicine, sensors and nanomaterial fabrications.[1]

A large number of chemically important reactions of organic compounds catalyzed by copper, such as azide-alkyne cycloaddition reaction (CuAAC), Ullmann reaction, Glaser oxidative coupling reaction, Kharash oxidation, copper- and palladium - catalyzed reaction of Cadiot–Chodkiewicz, cross-coupling with terminal alkynes (Sonogashira).[2] Thus, the design and synthesis of such catalytic systems is relevant and practically important task.



Hereby, in this work we have obtained new "heterogenized" copper-containing catalysts based on silicagel support which showed a great conversion in organic reactions made both in flow and batch conditions. However, copper nanocatalysts are now receiving more and more attention for their catalytic activity. Furthermore the surface energy of Cu-NPs increases as their particle size decreases, which makes them unstable and increases the tendency for inter-particle aggregation. Thus, various support materials have been employed to prevent Cu NPs aggregation, including silicagel. Inspired by the abovementioned considerations, in this study, the nano sized silica supported copper powder was prepared with chemical reduction method and investigated it's catalytic properties.

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References

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