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Functionalization of Keggin type nickel substituted phosphotungstate by imidazole: Synthesis, characterization and catalytic activity

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Transition metal substituted polyoxometalates (TMSPOMs) are of excellent candidate in Polyoxometalates chemistry due to their unique electrochemical, magnetic, medicinal and catalytic properties. In the TMSPOMs, the transition metal is coordinated with available five oxygen atoms of the POMs, while the sixth coordination site on the metal is occupied by an aqua ligand. Thus aqua ligand is labile and can be replaced by any organic group or even by organometallic groups. The obtained materials are called as functionalized materials and have potential applications in various fields from material science to biology. In present talk synthesis of a new polyoxometalate based functionalized material comprising Keggin type mono nickel substituted phosphotungstate and imidazole in an aqueous media by simple ligand substitution method was discussed. The synthesized material was systematically characterized in solid as well as in solution by various physicochemical techniques such as elemental analysis, TGA, UV-Vis, FT-IR, ESR, multinuclear solution NMR (^{31}P , ^1H , ^{13}C) and Cyclic Voltammetry. From the above study, it was revealed that the attachment of Keggin type mono nickel substituted phosphotungstate was through N \rightarrow Ni dative bond. The catalytic activity was also evaluated for non-solvent liquid phase oxidation of alkenes using H_2O_2 and O_2 under mild condition.

Biography

Anjali Patel has completed PhD degree from The Maharaja Sayajirao University of Baroda, Vadodara and Post-doctoral from IRC, CNRS, Lyon, France. She is working as a Professor (Inorganic Chemistry) at The M. S. University of Baroda. She has published more than 95 papers in international journals (55 papers since 2011) including 1 review article in Green Chemistry (RSC). She has 05 book chapters and 2 books (2013 Springer, ISBN: 978-94-007-6709-6; 2015 Springer Briefs in Molecular Science, ISBN 978-3-319-12988-4) to her credit. She has also 1 process patent (US 762047 B2) and 2 catalysts patent (Indian Patent Filed: 2078/MUM/2010; 3280/MUM/2010).

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