Synthesis of styrene-allylchloride Copolymer supported cobalt (II) Schiff base complex and its catalytic activity .

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Abstract

N,N0-bis(acetylacetone)o-phenylenediamine cobalt (II) Schiff base complex and its polymer bound analogue have been prepared and characterized for their structure and catalytic activity. To prepare heterogenized analogue of the cobalt (II) complex, a new crosslinked functional polymeric beads were prepared by suspension copolymerization of styrene (48.97 mmol, 5.1 g), allylchloride (48.97 mmol, 3.746 g) and divinylbenzene (1.50 mmol, 0.195 g) in the presence of azobisisobutyronitrile (9.0 £ 1024 mmol, 0.15 g) as initiator at 25 ^ 0.18C under inert atmosphere. The beads of variable crosslinked densities were prepared by varying the amount of divinylbenzene in a reaction mixture from 0.80–2.00 mmol. The beads prepared with 1.5 mmol of divinylbenzene contained 4.90 mmol (0.367 g) of allylchloride as found with the chlorine content in the beads. These beads have shown optimum degree of swelling (4.83%) and maximum attachment of N,N0-bis(acetylacetone)o-phenylenediamine Schiff base (1.96 mmol g21 of beads). These beads have also shown maximum loading of cobalt (II) ions on polymer anchored Schiff base (1.37 mmol g21 of beads). The spectral and magnetic measurements have suggested a square planar structure for cobalt (II) complex both in homogeneous and heterogeneous state. The heterogenized cobalt (II) complex has shown an enhanced rate of decomposition of hydrogen peroxide with low activation energy (42.37 kJ mol21) in comparison to a homogenized complex (63.59 kJ/ mol).