



Binary Complex Equilibria of 1,10-Phenanthroline with Co(II), Ni(II) and Cu(II) in Non-Ionic Surfactant Media

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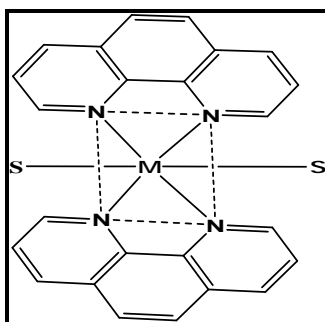
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ABSTRACT

Complex formation of 1,10-Phenanthroline (phen) with Co(II), Ni(II) and Cu(II) in micellar media: polyethylene glycol 400 (PEG-400, a neutral surfactant) (v/v 0.5-2.5) % has been carried out pH metrically at constant temperature of 298 °C and 0.16 mol dm⁻³ ionic strength. Magnitude of stability constants and best fit model for metal complexes obtained from MINQUAD75 computer program along with statistical parameters are presented. The plot of relative concentration of model species versus pH values has been developed from SIM refined data using origin85. Accordingly, ML₂ and ML₃ for Co(II) and Ni(II), ML, ML₂ and ML₃ for Cu(II) chemical models were obtained. The position of equilibria of the metal ligand binary system with percentage of surfactants at constant ionic strength and temperature could be attributed to low dielectric constant of the medium in the presence of PEG-400.

Graphical Abstract



Proposed Structures of M(II) phen complexes where M is either Ni(II) and S is either surfactant or water molecule.

Keywords: Complex equilibria, Metal ions, Phen, PEG-400, MINQUAD75.