nia molecules combined. The tetraamminecopper(II) complex has four ammonia molecules at the equatorial position and two water molecules at the axial one. The Cu–NH_3 bond distance within the complex is *longer* by 0.1 Å than the Cu–OH_2 distance within the aqua complex. On the contrary, the axial Cu–OH_2 bond within the tetraamminecopper(II) complex shortens by *ca.* 0.1 Å. In a higher copper(II)–ammine complex formed by the addition of a large excess of ammonia to the solution (although the composition of the complex is not determinable either $Cu(NH_3)_5(OH_2)^{2+}$ or $Cu(NH_3)_6^{2+}$ by the present method), the length of the Cu–NH_3 bond at the equatorial position within the complex *shortens* to 1.94 Å, whereas the length of the Cu–NH_3 bond at the axial position is remained practically unchanged by replacement of the water molecule(s) within the tetraamminecopper(II) complex with ammonia. Such complicated changes in the bond lengths within the copper ammine complexes are not explained by simple theories of coordination chemistry.

The diamminesilver(I) complex has a linear structure, which is simlar to the structure of the aqua silver(I) complex. However, the bond length between the silver atom and the ammonia molecules within the diammine complex is much shorter than the corresponding metal–ligand distance within the aqua complex. Free solvent molecules are not found in the region less than 3 Å from the central silver atom of the both complexes.

Classical Ionic Fluids in the Mean Spherical Approximation

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The analytical solution of the mean spherical approximation (MSA) has been used to calculate excess thermodynamic properties of aqueous and non-aqueous solutions of 1–1, 1–2, 1–3, 1–n electrolytes. For some solutions and a few molten salts also structure functions and pair correlation functions have been obtained. The possibility of use of MSA to simulate systems of primary interest in the framework of enhanced oil recovery is also discussed. Finally, MSA pair correlation functions are compared with the Debye–Hückel correlation functions in an attempt to compute higher order graph contributions beyond the ring diagrams which yield the D–H approximation.

Polymer Attached Catalysts

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Homogeneously catalyzed reactions usually take place at low temperatures and pressures and with high selectivity. Heterogeneous catalysts however have many engineering advantages.

A practical limitation to performing homogeneously catalyzed reactions in liquid phase is the difficulty of separating the product from the catalysts. To overcome this difficulty homogeneous catalysts have been attached to a variety of insoluble supports, with the aim of acquiring the properties of insolubility while maintaining the reactivity exhibited in solution.

The liquid phase, however, plays an important role in polymer supported catalysts and the solvent–substrate–support interactions have a large influence on the catalytic activity and selectivity of this type of catalysts. This property associated with the high dependence of the reduction rate on size and rigidity of the substrate suggests that reduction takes place within the resin, where the active sites are located, rather than at its surface, and that the catalyst could 'remember' conditions used during the synthesis.

Catalytic Red–Ox Reactions of Small Molecules with Participation of Solvent Protons

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Small molecules such as C_2H_2, CO, CO_2, N_2 *etc.* can be reduced in protic media in the presence of

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