The types of molecular structure generating lyotropic liquid crystal phases are amphiphilic.Some typical examples of amphiphilic molecules are given in Table Soaps such as sodium stearate (compound TlO.la) have a polar head group made up of a carboxylate salt and a nonpolar unit of a long hydrocarbon unit.Synthetic detergents, compounds TlO.lb (alkyl sulfates) and TlO.lc (aromatic sulfonates), are analogous in nature to the compound TlO.la.Compound TlO.lg is a typical example of an amphiphilic molecule in which the polar hydrophilic head group is made up of a long perfluoroalkyl chain connected directly to a long hydrocarbon chain as the hydrophobic section.Under certain conditions, larger structures than micelles generate, and these form lyotropic liquid crystals which may dissolve in more water to form an aqueous micellar solution.Amphiphiles that remain almost insoluble in water are nonpolar, and semipolar lipids, and polar surfactants at temperatures below the Krafft point.Amphiphilic molecules possess two distinct parts (polar as well as nonpolar) with rather different properties in the same molecule.Cationic surfactant (compound TlO.ld) consists of an amine with a long terminal chain.When a solvent (water) is added to solid amphiphilic material following possibilities can occur : The surfactant does not dissolve at all, and remains as a solid crystal plus an aqueous solution of amphiphile monomers.Amphiphilic molecules can also be generated by nonionic species, for example, compound TlO.l(e–f).The hydrophilic (polar) head attracts water, while the lipophilic tail (nonpolar) avoids water.The Krafft point is defined as the temperature (TK) below which micelles are insoluble.Within the temperature range between the Krafft point and the surfactant melting point mostly the lyotropic liquid crystals exist.These compounds TlO.l(a–c) are known as anionic surfactants.Some of the amphiphiles dissolve to form an aqueous micellar solution.Above the Krafft point lyotropic mesophases are generated.Usually the temperature must be increased to about 10?C above the Krafft point before lyomesophases are formed.