

- 1 Give examples of at least two of each of the three types of colloids that occur in papermaking processes. What kind of papermaking problems can be solved with help of surface and colloid chemistry?
- 2 Binding of simple metal ions to fibres can in many cases be described using the so-called Donnan equilibrium model. Which are the basic assumptions in this model? Describe, in particular, how the distribution of ions between fibres and surrounding solution is influenced by the valence of the ions. Is the pH inside the fibres higher or lower than in the bulk solution?
- 3 What are the most important mechanisms by which cationic polymers function as flocculants in papermaking. How (a) anionic (b) neutral disturbing substances influence the function of flocculants?
- 4 Describe with help of surface energy of different components and theory of spreading which surface phenomenon sizing of paper is based on.
- 5 In the deinking process it is necessary to use so-called collector chemicals in order to achieve sufficiently efficient removal of the ink particles. Why is it necessary to use such additives? By what mechanism is the most generally used collector chemical, calcium soaps, thought to function?