the intercellular lipid packing and so increase diffusivity through the stratum corneum but additionally can diffuse into the membrane and act as a solvent within the stratum corneum, into which drug can more easily partition.

Small aprotic solvents, such as dimethylsulphoxide, can interact with lipid bilayer head groups in the stratum corneum to disrupt their close packing and facilitate drug diffusion, whereas fatty acids (e.g. oleic acid) insert along the stratum corneum lipid chains to disrupt packing. Bespoke penetration enhancers, such as Azone (1-dodecylazacyclohpetan-2-one), have been designed to possess a bulky polar head group and a lipid chain. The molecule can insert within the lipid lamellae to disrupt the endogenous stratum corneum lipid bilayers at both head and chain regions. Other commonly used excipients with enhancer activities include terpenes (fragrance agent) and surfactants. Potential mechanisms by which penetration enhancers can disrupt the lipid bilayers of the stratum corneum are illustrated in Figure 39.9.

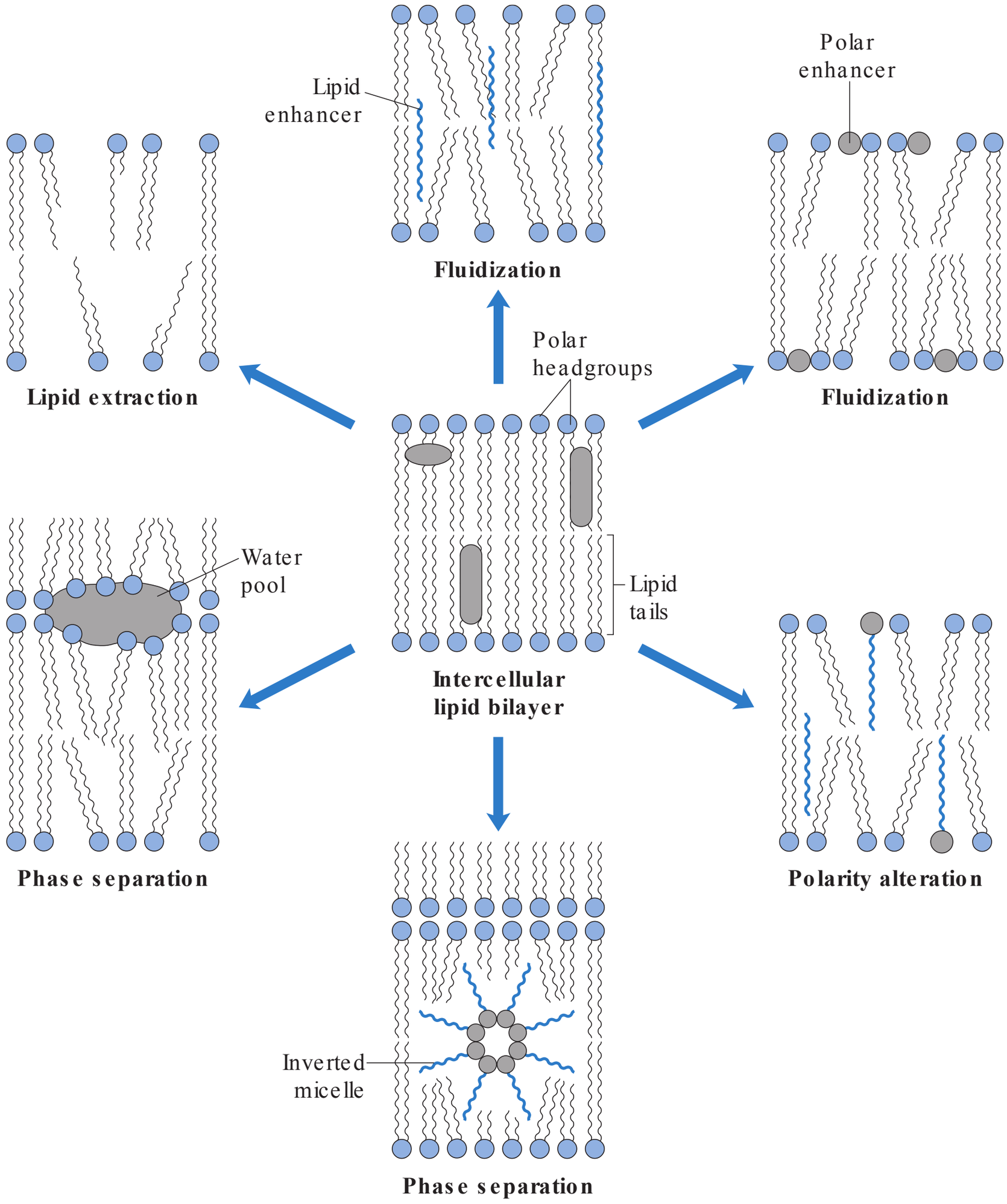

Fig. 39.9 • Potential mechanisms of action for penetration enhancers acting on the intercellular lipids of the stratum corneum.