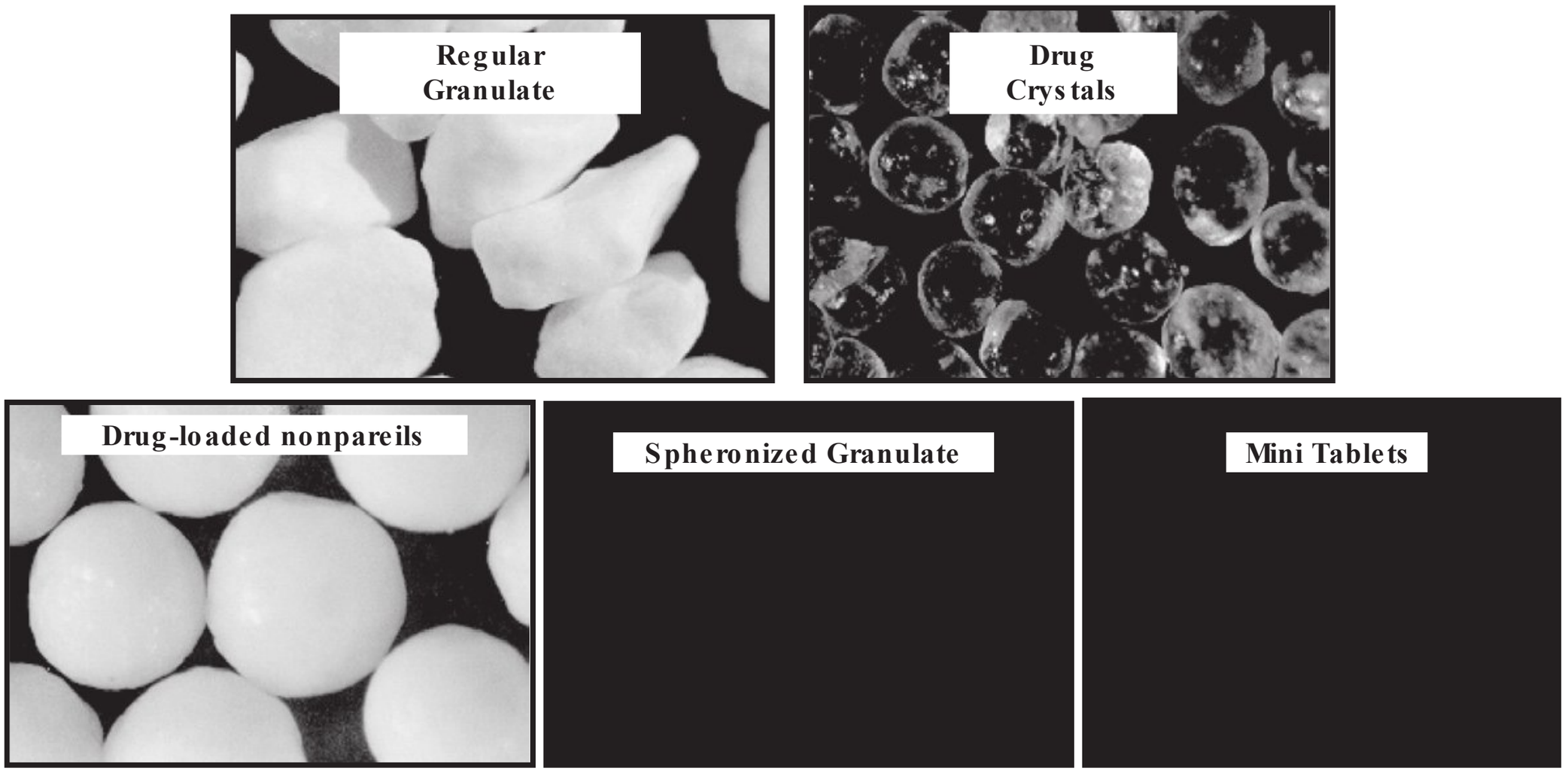

Fig. 32.10 • Examples of film-coated multiparticulates.

although some such particles may also be prepared using microcrystalline cellulose. Application of the drug uses either:

- a powder-dosing technique involving alternate dosing of powder (containing the drug substance) and binder liquid onto the surface of the nonpareils until the required dose of drug has been achieved
- spray application of drug, either suspended or dissolved in a suitable solvent (usually water) containing also a polymer binder (such as hydroxypropyl methylcellulose or polyvinyl pyrrolidone) onto the surface of the nonpareils.

Mini-tablets

Many of the other types of multiparticulates described so far suffer from two potential batchwise drawbacks, namely:

- variation in particle size distribution
- variation in particle shape and surface roughness.

Such variability can result in variable coating thickness and thus product performance. This problem can be overcome by using mini compressed tablets (typically in the size range of 1–2 mm) produced using a modification of traditional tableting processes.

Mechanisms of drug release from multiparticulates

There are many factors that influence drug release from coated multiparticulates, some of which are related to the formulations used and others to the various manufacturing processes employed. Irrespective of the actual number of factors involved, it is generally accepted that the mechanisms of drug release (Ozturk et al 1990, Zhang et al 1991) can generally be ascribed to specific conditions.

Diffusion

Diffusion is primarily a process whereby drug will partition into the film coat membrane and permeate through it. The rate at which the drug is released by this mechanism is primarily influenced by the drug concentration gradient across the membrane, the thickness of the membrane, the solubility of the drug in the membrane and the permeability coefficient governing passage of the drug through the membrane.

Osmosis

Once water has passed through the film coating, dissolution of soluble components (excipients and drug) within the core can allow an osmotic pressure