

Hydrogels are three-dimensional (3D) materials with the ability to absorb large amounts of water while maintaining their dimensional stability. coatings (e.g., on implants or catheters; on pills or capsules, or coatings on the inside capillary wall in capillary electrophoresis) 5. Hydrogel-forming natural polymers include proteins such as collagen and gelatin, and polysaccharides such as alginate and agarose. in concentrating dilute solutions in bioseparation Applications of Smart Hydrogels Hydrogels may also have many different physical forms, including 1. tissue engineering Smart hydrogels have been used in diverse applications 1. pressed powder matrices (e.g., pills or capsules for oral ingestion) 3. Hydrogels can also be separated into two groups on the basis of their natural or synthetic origins. good biocompatibility 1. Smart Hydrogels biomedical fields 1. microparticles (e.g., as bioadhesive carriers or wound treatments) 4. encapsulated solids (e.g., in osmotic pumps) 7. liquids (e.g., that form gels upon heating or cooling