Polymer Solutions Definition

As opposed to crystallographic scattering experiments, where the scatterer or "target" has very distinct order, which leads to well defined patterns (presenting Bragg peaks for... 2bef481630 Water-absorbing polymers, which are classified as hydrogels when mixed, absorb aqueous solutions through hydrogen bonding with water molecules. A SAP's ability to absorb water depends on the ionic concentration of the aqueous solution. In deionized and distilled water, a SAP may absorb 300 times its weight (from 30 to 60 times its own volume) and can become up to 99.9% liquid, and when put into a 0.9% saline solution the absorbency drops to approximately 50 times its weight. The presence of valence cations in the solution impedes the polymer's ability to bond with the water molecule. 2bef481630

Solid solution The word "solution" is used to describe the intimate mixing of components at the atomic level and distinguishes these homogeneous materials from physical mixtures of components. Many examples can be found in metallurgy, geology, and solid-state chemistry. Two terms are mainly associated with solid solutions – solvents and solutes, depending on the relative abundance of the atomic species. The number of drug molecules that do behave as solvent (plasticizer) of polymers is small. On a phase diagram a solid solution is represented A solid solution, a term popularly used for metals, is a homogeneous mixture of two compounds in solid state and having a single crystal structure. drug and polymer 2bef481630

Polymer Polymers range from familiar synthetic plastics such as polystyrene to natural biopolymers such as DNA and proteins that are fundamental to biological structure and function. Due to their broad spectrum of properties, both synthetic and natural polymers play essential and ubiquitous roles in everyday life. A macromolecule is a molecule of high relative molecular mass, the structure of which A polymer () is a substance or material that consists of very large molecules, or macromolecules, that are constituted by many repeating subunits derived from one or more species of monomers. Their consequently large molecular mass, relative to small molecule compounds, produces unique physical properties including toughness, high elasticity, viscoelasticity, and a tendency to. Polymers, both natural and synthetic, are created via polymerization of many small molecules, known as monomers. IUPAC definition A polymer is a substance composed of macromolecules 2bef481630

Condensation polymer IUPAC definition Polycondensation: a polymerization in In polymer chemistry, condensation polymers are any kind of polymers whose process of polymerization involves a condensation reaction (i. a small molecule, such as water or methanol, is produced as a byproduct). Natural proteins as well as some common plastics such as nylon and PETE are formed in this way. The main alternative forms of polymerization are chain polymerization and polyaddition, both of which give addition polymers. Condensation polymers are formed by polycondensation, when the polymer is formed by condensation reactions between species of all degrees of polymerization, or by condensative chain polymerization, when the polymer is formed by sequential addition of monomers to an active site in a chain reaction. e. polymerization are chain polymerization and polyaddition, both of which give addition polymers 2bef481630

In general if two compounds are isostructural then a solid solution will exist between the end members (also known as parents). For example sodium chloride and potassium chloride have the same cubic crystal structure so it is possible to make a pure compound with... 2bef481630 Commercial copolymers include acrylonitrile butadiene styrene (ABS), styrene/butadiene co-polymer (SBR), nitrile rubber, styrene-acrylonitrile, styrene-isoprene-styrene (SIS) and ethylene-vinyl acetate, all of which are formed... 2bef481630

Emulsion polymerization The name "emulsion polymerization" is a misnomer that arises from a historical misconception. These latex particles are typically 100 nm in size,. Water-soluble polymers, such as certain polyvinyl alcohols or hydroxyethyl celluloses, can also be used to act as emulsifiers/stabilizers. In polymer chemistry, emulsion polymerization is a type of radical polymerization that usually starts with an emulsion incorporating water, monomers, and In polymer chemistry, emulsion polymerization is a type of radical polymerization that usually starts with an emulsion incorporating water, monomers, and surfactants. The most common type of emulsion polymerization is an oil-in-water emulsion, in which droplets of monomer (the oil) are emulsified (with surfactants) in a continuous phase of water. Rather than occurring in emulsion droplets, polymerization takes place in the latex/colloid particles that form spontaneously in the first few minutes of the process 2bef481630

Copolymer Copolymers obtained from the copolymerization of two monomer species are sometimes called bipolymers. IUPAC definition copolymer: A polymer derived from more than one species of monomer. The polymerization of monomers into copolymers is called copolymerization. develop commercial goods or drug delivery vehicles. Those obtained from three and four monomers are called terpolymers and quaterpolymers, respectively. (See Gold Book In polymer chemistry, a copolymer is a polymer derived from more than one species of monomer. Copolymers can be characterized by a variety of techniques such as NMR spectroscopy and size-exclusion chromatography to determine the molecular size, weight, properties, and composition of the material 2bef481630

Propagation: The initiator fragment reacts with a monomer M to begin the conversion to the polymer; the center of activity is retained in the adduct. Monomers continue to add in the same way until polymers Pi* are formed with the degree of polymerization i 2bef481630

Branching (polymer chemistry) Polycarbonate chains. Branched polymers have more compact and symmetrical molecular conformations, and exhibit intra-heterogeneous dynamical behavior with respect to the unbranched polymers.) In polymer chemistry, branching is the regular In polymer chemistry, branching is the regular or irregular attachment of side chains to a polymer's backbone chain. g. a hydrogen atom) on a monomer subunit by another covalently-bonded chain of that polymer; or, in the case of a graft copolymer, by a chain of another type. (See Gold Book entry for note. chain): An oligomer molecule or polymeric offshoot from a macromolecular chain. In crosslinking rubber by vulcanization, short sulfur branches link polyisoprene chains (or a synthetic variant) into a multiple-branched thermosetting elastomer. It occurs by the replacement of a substituent (e. Rubber can also be so completely vulcanized that it becomes a rigid solid, so hard it can be used as the bit in a smoking pipe 2bef481630

Polymer scattering As in most scattering experiments, it involves subjecting a polymeric sample to incident particles (with defined wavelengths), and studying the characteristics of the scattered particles: angular distribution, intensity polarization and so on. This method is quite simple and straightforward, and does not require special manipulations of the samples which may alter their properties, and hence compromise exact results. characteristics of polymeric systems: solutions, gels, compounds and more. As in most scattering experiments, it involves subjecting a polymeric sample to incident Polymer scattering experiments are one of the main scientific methods used in chemistry, physics and other sciences to study the characteristics of polymeric systems: solutions, gels, compounds and more 2bef481630

Chain-growth polymerization involves 3 types of reactions : 2bef481630 Initiation: An active species I* is formed by some decomposition of an initiator molecule I 2bef481630 The... 2bef481630 Condensation polymerization is a form of step-growth polymerization... 2bef481630

Polymer engineering Later, this definition underwent a subtle modification. (C6H6) to be a polymer of ethyne (C2H2). The history of human use of polymers has been long since Polymer engineering is generally an engineering field that designs, analyses, and modifies polymer materials. Polymer engineering covers aspects of the petrochemical industry, polymerization, structure and characterization of polymers, properties of polymers, compounding and processing of polymers and description of major polymers, structure property relations and applications 2bef481630

Termination: By some reaction generally involving two polymers... 2bef481630

Chain-growth polymerization There are a limited number of these active sites at any moment during the polymerization which gives this method its key characteristics. deactivated, resulting in dead polymer IUPAC definition chain polymerization: A chain reaction in which the growth of a polymer chain proceeds exclusively Chain-growth polymerization (AE) or chain-growth polymerisation (BE) is a polymerization technique where monomer molecules add onto the active site on a growing polymer chain one at a time 2bef481630

Superabsorbent polymer relative to its own mass. Water-absorbing polymers, which are classified as hydrogels when mixed, absorb aqueous solutions through hydrogen bonding with water A superabsorbent polymer (SAP) (also called slush powder) is a water-absorbing hydrophilic homopolymers or copolymers that can absorb and retain extremely large amounts of a liquid relative to its own mass 2bef481630