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Original Research Article

A Review of Frontal Polymerization in the Chemical Industry

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ABSTRACT

Frontal polymerization is a relatively old polymerization process that is performed in a limited space and is done with a spontaneously progressive wave mechanism. This process is for quick and easy preparation of all types of polymers, co-polymers, nano composites, large composite parts. In recent years, it has been used to prepare polymer hydrogels. This study is an overview of frontal polymerization in the chemical industry. Hydrogels are a group of lattice polymers with a three-dimensional structure, which, due to their hydrophilic groups, are able to absorb large amounts of water and biofluids without dissolving. SO₃H- in the structure of hydrogels. These materials can absorb from 10% to thousands of times their initial weight in the dry state of water. The water content of hydrogels plays an important role in determining the overall properties of the polymer network. For this reason, compared to hydrophobic polymer networks, hydrophilic hydrogels show different properties. Also, the preparation conditions of hydrophilic hydrogels are milder due to the formation of gels at room temperature and the rare use of organic solvents.

Keywords: Polymerization, Chemical Industry, Water, Hydrogel, Solvent