

Biodegradable polyimide aerogels with peptide group for drug delivery

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To synthesize a series of biodegradable copolyimide, we prepared the monomer pyromellitic dianhydride (PMDA), 4,4-oxydianiline (ODA) that used in previous study, and 3,5-diaminobenzoic acid as a monomer having two amines and carboxylic acid group. Then Peptide groups were synthesized from ODA and DABA in N-methyl-2-pyrrolidone (NMP) at 120°C. The polyimide aerogels finally resulted by supercritical fluid extraction process. The Aerogels were characterized using thermogravimetric analysis (TGA), Differential scanning calorimetric analysis (DSC). Inner structure of aerogels was identified by Fourier transform infrared spectroscopy (FTIR) and field emission scanning electron microscopy (FE-SEM). It was found that the polyimide aerogels had showed high thermal resistance and high porous, cross-linked structure. Caffeine adsorption experiments were carried out for application of drug delivery and results were obtained using ultra high performance liquid chromatography (UPLC).