

Full factorial design optimization of anti-inflammatory drug release by PCL–PEG–PCL microspheres

Farid Dahmoune, Farouk Rezgui, Christian G'Sell	Authors
2016/1/1	Publication date
Materials Science and Engineering: C	Journal
58	Volume
412-419	Pages
Elsevier	Publisher

Description

A biodegradable triblock poly(ϵ -caprolactone)–poly(ethylene glycol)–poly(ϵ -caprolactone) copolymer was successfully synthesized by ring-opening polymerization of ϵ -caprolactone, and was characterized by intrinsic viscosimetry, ^1H nuclear magnetic resonance, infrared spectroscopy and X-ray diffraction. Copolymer microparticles loaded with ibuprofen were prepared by an oil-in-water (o/w) emulsion solvent evaporation process. They were carefully weighted and characterized through their zeta potential. In this work, 4 selected process parameters (shaking speed X_1 , time of contact X_2 , poly(vinyl alcohol) concentration X_3 , and ibuprofen concentration X_4) were adjusted at 2 different values. For each of the 16 experimental conditions, repeated twice, the drug encapsulation efficiency of the microspheres was determined, according to the following definition: $EE(X_1, X_2, X_3, X_4) = \text{mass of encapsulated ibuprofen} \dots$