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Mathematical modelling of biodegradable polymer implants

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The use of biodegradable materials as implants has revolutionized the way medicine is practiced today. Among many biodegradable polymers PLA and PGA have many practical applications. Accurate Modelling of such polymers plays an important role in the designing of drug delivery systems and medical implants. So the main aim of the present work is to develop a simple mathematical model to represent the complete degradation of PLA implants.

There are different models which represents the hydrolytic degradation of PLA. In all the models water diffusion kinetics are neglected by assuming water diffusion into the PLA implant is very fast irrespective of thickness of the implant which is not true. The present work account the kinetics of water diffusion into the model which is not considered in the previous models. The model results are compared with the experimental data as well as previous models. The agreement between the predictions and experimental data is very good.

Biography

Rama subba reddy has completed his M.E in chemical engineering from Indian Institute of Science, Bangalore in 2009. currently working as a researcher in T.R.D.D.C, pune.