Time programmed feed of semi-batch reactors with non-linear radical copolymerizations: an experimental study of the system styrene+divinylbenzene using SEC/ MALLS

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Objectives

This research aims at assessing the influence of the monomers feed policies on the properties of non-linear polymers obtained by radical copolymerization, using as a model system styrene + divinylbenzene initiated by AIBN in a 2 dm^3 reactor. Analysis of products is carried out by SEC with a MALLS detector.

New results and conclusions

Polymers made with a constant slow feed of divinylbenzene after charging the reactor with the full amount of styrene show a roughly bimodal MWD (Fig. 1). A comparison with the predictions of kinetic models [1-3] is encouraging (Fig. 2) and it expected to further improve current knowledge on the combined modeling and design of these products and reactors.

References

[1] Costa MRPFN, Dias RCS, Polymer, 48, 1785, 2007

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[3] Costa MRPFN, Dias RCS, Chemical Engineering Science, 60, 423, 2005

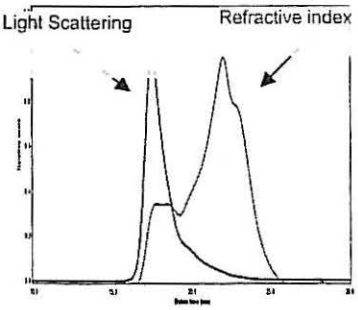

Fig. 1: Chromatograms of polymer made in semi-batch operation mode

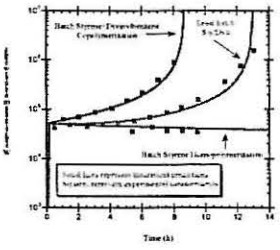

Fig. 2: Experimental and predicted time evolution of weight average molecular weight