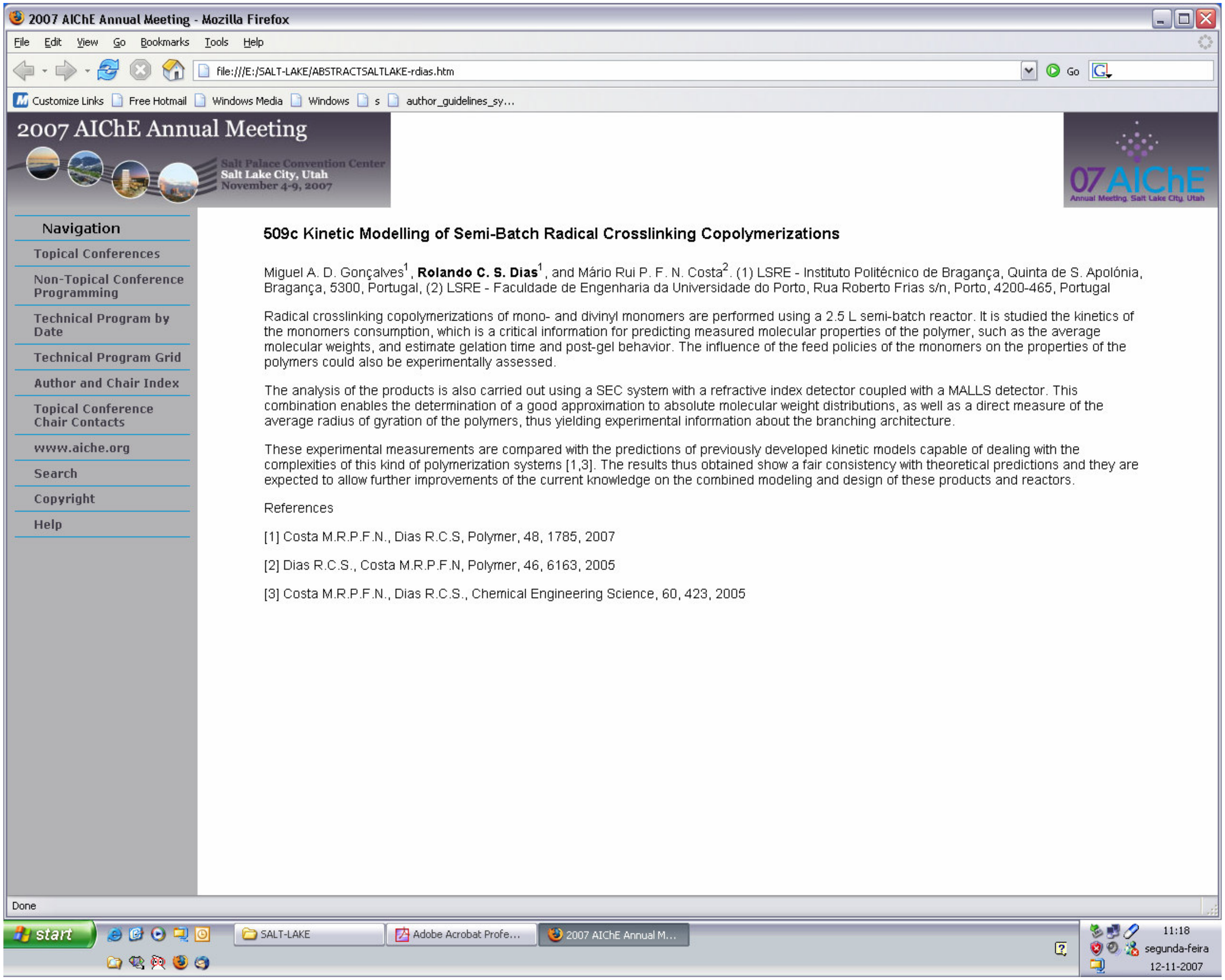

509c Kinetic Modelling of Semi-Batch Radical Crosslinking Copolymerizations

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Radical crosslinking copolymerizations of mono- and divinyl monomers are performed using a 2.5 L semi-batch reactor. It is studied the kinetics of the monomers consumption, which is a critical information for predicting measured molecular properties of the polymer, such as the average molecular weights, and estimate gelation time and post-gel behavior. The influence of the feed policies of the monomers on the properties of the polymers could also be experimentally assessed.

The analysis of the products is also carried out using a SEC system with a refractive index detector coupled with a MALLS detector. This combination enables the determination of a good approximation to absolute molecular weight distributions, as well as a direct measure of the average radius of gyration of the polymers, thus yielding experimental information about the branching architecture.

These experimental measurements are compared with the predictions of previously developed kinetic models capable of dealing with the complexities of this kind of polymerization systems [1,3]. The results thus obtained show a fair consistency with theoretical predictions and they are expected to allow further improvements of the current knowledge on the combined modeling and design of these products and reactors.

References

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