



G09.31

**Numerical Evaluation of Mixing in the Intermeshing and Translating Regions of Co-rotating Fully Conjugated Twin Screw Extruder**

\*M. Salami Hosseini, H. Nazokdast, F. Sharif

*Polymer Engineering Department, Amirkabir University of Technology (Teheran Polytechnic), Tehran, Iran*

The main objective of the present work was to evaluate the mixing performance of intermeshing and translating region of the conveying element of a conjugated co-rotating twin screw extruder using CFD methods. A 3-dimensional, isothermal Newtonian flow analysis was performed on equal volume of the intermeshing and translating region of the screws. The Residence Time Distributions (RTD) of these regions were calculated, using numerical particle tracing method. The contribution of elongational and shear flow on mixing of each of these two regions were evaluated using Weighted Average Total Shear (WATSh) and Weighted Average Total Elongation (WATE) as mixing criteria. The predicted results showed that the residence time distribution of the intermeshing region is slightly narrower than that of translating region. It was also found that the contribution of elongational flow on mixing performance of the intermeshing region is greater than that of translating region whereas reverse results were found for the contribution of the shear flow.