LIQUID INJECTION MOLDING SIMULATION (LIMS)
SIMULATION OF LIQUID COMPOSITE MOLDING

P. Simacek and S. G. Advani
University of Delaware . Center for Composite Materials . Department of Mechanical Engineering

LIMS

♦ Predicts the resin flow patterns during LCM process.
♦ Estimates the process time and pressure requirements.
♦ Allows to determine the effect of flow disturbances and control actions on filing flow virtually, without the process being actually performed.
♦ Allows the user to optimize and control the resin injection.

Complex Part Shape: Combination of 1D, 2D, 2.5D and 3D Elements

LIMS Workflow

- Part Design/Meshing
  CAD Software
- Preparing Data for Simulation
  LIMS UI (User Interface)
- Running Simulation
  LIMS or LIMS SLV

Directly From LIMS UI
From Command Line

- Converting Input Data
  - Setting Material Properties
  - Creating Gates and Vents
  - Creating and Editing Control LBM/CFiles

Flow Patterns
Pressure
Mid-plane Temperature
Saturation

Fully Programmable Simulation for Adaptability

Modeling Dual Scale Flow
Actively Controlled Sequential Injection
Compression RTM Model

Gui Adjusted to the LCM Needs

Creation of Race-tracking Channels
Creation of Distribution Media

Modeling Disturbed Filling Pattern in Automotive Trailer

Acknowledgements

This work is supported by the Office of Naval Research through the Advanced Materials Intelligent Processing Center.