

Intugent I-Rheo

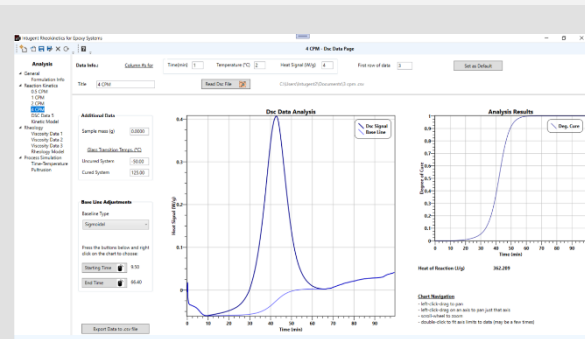
Process Simulation Solution for Thermoset Polymers

Increase your odds of being successful at the very first commercial scale application of thermoset polymer systems by simulating the process with I-Rheo. Use I-Rheo to reduce developmental times and costs.

Designed by researchers with extensive experience in thermoset polymers, it incorporates the latest developments in the materials science of thermoset polymers. A searchable database allows researchers to share the kinetic and rheology models and simulate commercial application processes.

I-Rheo's intuitive front-end and powerful optimization engine makes it easy for everyone to use it. Technical sales staff can use I-Rheo to identify systems with right mechanical properties and processing characteristics. **No background in mathematical modeling is needed.**

Key steps in model development and process simulation are described below.



Kinetic Model

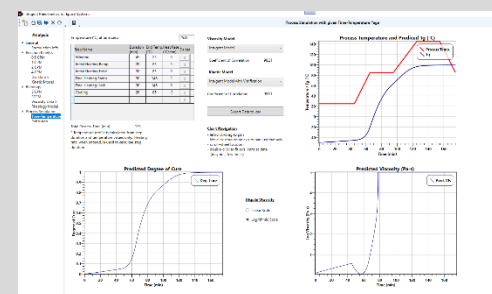
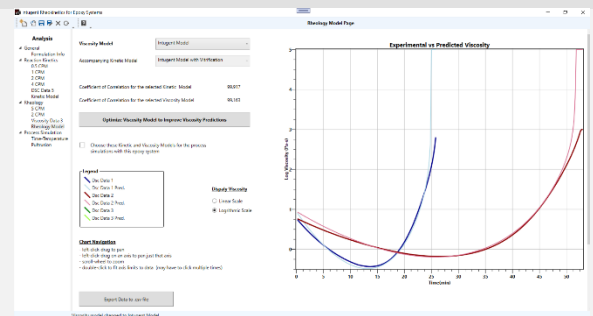
Use 2-5 DSC scans (isothermal or dynamic) to develop a kinetic model for the given thermoset system. The choice of models available can take into account autocatalytic reactions, gelation and vitrification.

I-Rheo auto-detects reaction peaks and draws the baseline. Users can graphically change the end points of reaction exotherm and the type of baseline, if needed.

Rheology Model

Model viscosity growth using the kinetic model and 1-3 rheology scans. A variety of models are available that can take into account gelation and vitrification.

Develop models with a click of button. View graphically the quality of predictions. Save to the database for future use.



Process Simulation with Time-Temp. History

Simulate progress of reactions and viscosity development using the time-temperature profile of the application process. Any of the thermoset systems that have been modelled in the past and saved in the database can be used to simulate the process.

Optimize the process for the right pot life, minimum viscosity, gel time, green strength times and other processing parameters.

Processes with Integrated Heat Balance

Work is ongoing to include processes where the time-temperature history is not known a priori. Next version of I-Rheo will include simulation of the pultrusion process. No background in math modelling or finite element analysis will be needed to run these models.