**Software Title:** *asyMemLocal* – Asymmetric Membrane Local Flux Transport Simulator

**About this model:**

The software package provides the user with a means to solve for the partial transmembrane fluxes for complex mixtures of any number of components utilizing the thermodynamic and diffusional coupling built into the Maxwell-Stefan transport modeling framework. Current support is for asymmetric polymer membranes, including 2 popular sorption models (Flory-Huggins, and classical dual-mode sorption) as well as a novel approach to describing glassy polymer sorption using the combined Flory-Huggins-Langmuir model. This software also includes novel membrane swelling diffusion models based on an average diffusion “sorption-vection” cohort style diffusion as well as a polymer free-volume based diffusion model. *Local* transport has to do with the system being solved at a single point on the membrane matrix. Assuming the driving forces are not changing in the global membrane module, this software can model bench-scale experiments or project an estimate for industrial applications. A global membrane module simulator is also in development and will be released later this year.

**Licensing Statement:**

The general-purpose simulator for local asymmetric membrane transport (*asyMemLocal*), herein referred to as the simulator, was developed at the Georgia Institute of Technology by Dr. Joseph K. Scott (PI) and Dylan Weber (Graduate Student) and is owned by Georgia Tech Research Corporation. The work was supported by Rapid Advancement in Process Intensification Deployment (RAPID) institute’s Center for Process Modeling (CPM) led by Dr. Chau-Chyun Chen, Dr. Maximilian B. Gorensek, and Dr. Joseph K. Scott.

The simulator is available to academic research and noncommercial purposes within the RAPID Community for free. Any external publications of the disclosed models are prohibited until the IP generator publishes corresponding research papers in a public domain. Any commercial usage of the simulator will require the member to negotiate a non-exclusive license from Georgia Tech (GT) Office of Technology Licensing (OTL). For information on the licensing, please contact Dr. Terry Bray, the director of GT-OTL, at [terry.bray@industry.gatech.edu](mailto:terry.bray@industry.gatech.edu).

**User base:**

Grad students, Process engineers, Subject matter experts, Undergraduates

**Keywords:**

Asymmetric membrane, Maxwell-Stefan, Polymer membranes, process model