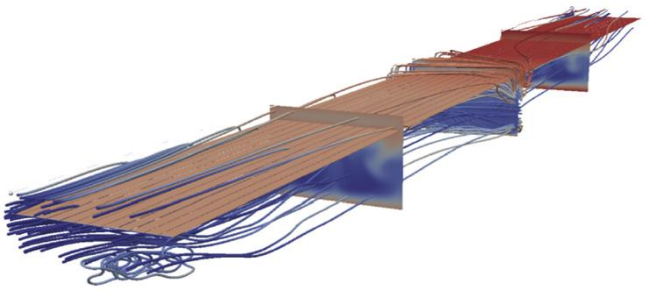
Harper International
4455 Genesee Street
Buffalo, NY 14225
Tel: (716) 276-9900
Fax: (716) 810-9460
Media Contact: Jocelyn DiCarlo
E-mail: jdicarlo@harperintl.com

March 11, 2019 **FOR IMMEDIATE RELEASE**

Harper and Oak Ridge National Lab Complete First Phase of Joint Development of Carbon Fiber LT Carbonization Simulation

Buffalo, NY – Harper International and Oak Ridge National Lab (ORNL) have completed the first phase of their co-operative simulation work titled "Development and Validation of Simulation Capability for the High Capacity Production Carbon Fiber". The purpose is to ensure thermal processing systems provide the necessary uniformity of processing conditions to produce fiber of a certain quality, output and cost ideal for automotive applications.



Streamline color indicating the concentration of off-gas Carbon Fiber tow plane and cut-planes color depicting temperature

In the work completed in the current phase Harper and ORNL have developed a computational model for the Low Temperature pre-carbonization furnaces [LT]. The simulation model has a focused attention to the mass transfer from the fiber to the gas phase with the reaction energy. The model includes radiative heating of the fiber tows and gases, fiber and gas energy balances and effects of fiber movement and residence time. The coupling of fiber mass transfer to the gas phase with reaction energies and the complex heat transfer is a significant step forward in the simulation of LT carbonization. The development of comprehensive coupled modeling capability has allowed the investigation of the influence of radiation and flow physics at a significantly higher fidelity, challenges remain in advancing the understanding of the impact processing parameters have upon the physical properties of carbon fiber.

.

This project enabled a team composed of Harper (Tae-Seok Lee, Peter Witting) and ORNL (Srikanth Allu, Srdjan Simunovic) to advance its work as a champion of innovative carbon fiber processing technologies for markets such as mass automotive applications, now with access to world-class supercomputers and deeper scientific expertise," commented Dr. Prasad Apte, Director of Technology at Harper International. "We are proud to be collaborating with the pioneering thought leaders at ORNL in continuation of our strong relationship."

About Harper International

Harper International is a global leader in complete thermal processing solutions and technical services for the production of advanced materials. From concept to commercialization, from research scale to full production line operations, Harper delivers the most innovative furnace and oven designs in the world. For decades, they have pioneered thermal processing technology innovations with a focus on systems operating from 500 to 3000°C and in non-ambient atmospheres. For additional information, please visit www.harperintl.com or email info@harperintl.com.

###