CACHE News
Summer 2015

FOMMS 2015 Medal

FOMMS 2015 is pleased to announce that the 3rd Triennial FOMMS Medal was awarded to **Professor Carol K. Hall of North Carolina State University**, for *profound and enduring contributions to statistical thermodynamics, through her insightful and innovative application of molecular modeling and simulation to the study of complex fluids, including colloidal suspensions, polymers, and biomolecular assemblies*. Carol currently serves as the Camille Dreyfus Distinguished University Professor at North Carolina State University, and she is a former trustee of CAChE.

Carol's research is consistently characterized by innovation and insight, and indeed, she has been at the forefront (and in many cases, the initiator) of several important research areas. In 1983, she developed a theoretical approach based on perturbation theory to model phase separation in colloidal suspensions, co-authoring a seminal paper that established the application of molecular modeling methods to complex solutions. Beginning in 1986, she produced a series of groundbreaking papers wherein she took the lattice-based Flory theory and reworked it in the context of off-lattice polymers. The concepts introduced in these papers were adopted by her and many subsequent researchers to develop equations of state for polymers and chain molecules. Carol has also been a trailblazer in the development and application of simulation methods to understand complicated polymer behaviors. Carol's 2004 PNAS paper on molecular dynamics simulations of fibril formation used her own ingenious coarse-grained simulation methodology, based on discontinuous molecular dynamics, to demonstrate the dynamics of protein-protein aggregation for the first time. These processes are implicated in many degenerative diseases of the brain. These novel research contributions illustrate the philosophy that Carol has adopted to bring new understanding to difficult problems: she reduces complex situations to models that are realistic enough to capture the essential physics or biology, yet simple enough that they are amenable to theory, or can be simulated over reasonable periods of real time. In this manner, she accesses key behaviors that would be unrealizable in a more complicated model.

Carol's research accomplishments have been well recognized. She has had countless invitations for named lectureships, including the AIChE Institute Lecture in 2006. She is a Fellow of the AIChE and the APS, and she was elected to the National Academy of Engineering in 2005. In 2008, she was recognized by AIChE as one of 100 chemical engineers of the modern era, and now in 2015 her contributions are being recognized with the Founders Award, the highest honor bestowed by the AIChE.

Carol also enjoys a reputation as an outstanding teacher and mentor. She is known by her students not only for the excellent training she provides, but also for the exceptional care and commitment she invests in their intellectual, social, and emotional well-being. This investment has paid off well, as many of these students have themselves gone on to becomes leaders in academia and their research fields, thus greatly amplifying her impact.