Best Papers

2013 SPE® ACCE *Best Paper Award* Winners to be Honored During Opening Ceremonies

This Year's three ***Best Paper Award*** winners for the 13th-annual ***SPE® Automotive Composites Conference & Exhibition*** (ACCE) all will be presented in the Virtual Prototyping & Testing of Composites session. These three author teams received the highest average ratings by conference peer reviewers out of a field of 90 contenders and will be honored during opening ceremonies. Honorees Thierry Malo, engineering services team leader at ***e-Xstream engineering***, an MSC Company; David Sheridan, senior design engineer at ***Ticona Engineering Polymers***, the engineering polymers business of Celanese Corporation; and Dr. Ivor Huan-Chang Tseng, program manager at ***CoreTech System (Moldex3D) Co. Ltd.*** or their representatives will receive a commemorative plaque for excellence in technical writing during opening ceremonies at this year's SPE ACCE.

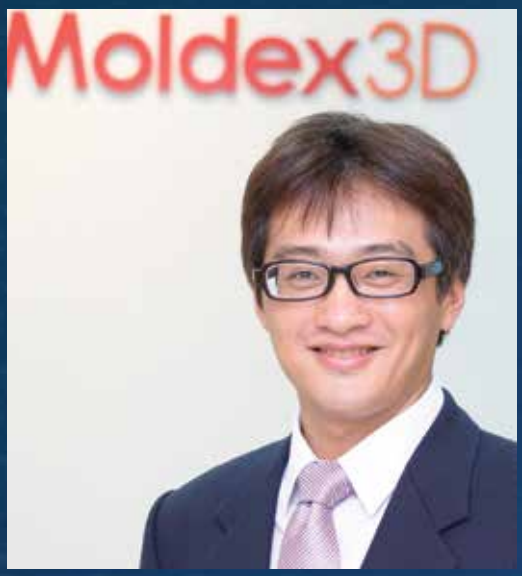
Thierry Malo, engineering services team leader at ***e-Xstream engineering*** was lead author (along with Laurent Adam and Roger Assaker, also of e-Xstream engineering, and Tsukatada Matsumoto and Riccardo Giacomini from Toyota Motor Europe) on a paper entitled ***Multi-Scale Modeling of High Cycle Fatigue of Chopped and Continuous Fiber Composites***, which will be presented by e-Xstream colleague, Kurt Danielson on September 12 from 8:00-8:30 a.m. The paper introduces two micro-mechanically based composite fatigue models. The focus is on the high-cycle fatigue model implemented specifically for chopped-fiber-reinforced plastics that were used on an automotive oil-cooler bracket on a Toyota vehicle in Europe. The bracket is molded from short-glass-reinforced polyamide (PA, also called nylon) 6/6 resin. Through this case study, the presentation shows how the use of proper fatigue-modeling tools, developed specifically for composites, can increase the accuracy of simulation in the field of durability and pave the way for new simulation standards that help support the desired weight reductions of vehicle components.

Aside from Malo's current responsibilities as team leader for the engineering services group at e-Xstream, he also is involved in all initiatives at the company on fatigue modeling of composites. He joined e-Xstream in 2009 as a project engineer. Before that, he worked for Rhodia Engineering Plastics on the development of state-of-the-art composite modeling techniques.

David Sheridan, senior design engineer at ***Ticona Engineering Polymers*** was lead author (along with Ulrich Mohr-Matuschek and Anton Grzeschik of Ticona GmbH, and Roland Peter of Inteva Roof Systems) on a paper entitled ***Integrated Anisotropic Simulation for Components Made from Glass Fiber Reinforced Thermoplastics***, which he will present on September 12 from 11:30 a.m. - 12:00 p.m. along with a tutorial earlier that day on Design & Development of Precision Plastic Gear Transmissions. The paper discusses how accurately analyzing and predicting the mechanical behavior of components made from fiber-reinforced thermoplastics is complex owing to the fact that fibers are individually oriented during injection molding. Finite-element analysis often uses isotropic material models, but accuracy of results can be improved if local fiber orientations are considered with anisotropic material properties. The paper introduces the analysis process and a practical application.

Sheridan has worked for Ticona and been involved with the design and analysis of plastic parts for over 25 years. He also has been involved with plastic gear design and analysis for the past 15 years and is an active member of the American Gear Manufacturers Association's Plastics Gearing Committee. He has authored many articles on plastic part and gear-related topics. He holds a Bachelor's of Science degree in Mechanical Engineering from the former GMI Engineering & Management Institute (now called Kettering University).

Dr. Ivor Huan-Chang Tseng, program manager at ***CoreTech System (Moldex3D) Co. Ltd.***, was lead author (along with Yuan-Jung Chang, Tzu-Chang Wang, and Chia-Hsiang Hsu of CoreTech System (Moldex3D) Co., Ltd., and Rong-Yeu Chang, National Tsing-Hua University) on a paper entitled ***Three Dimensional Predictions of Fiber Orientation for Injection Molding of Long Fiber Reinforced Thermoplastics***, which will be presented on September 11 from 2:30 - 3:00 p.m. by Moldex3D colleague, Ken (KC) Cheng. The award-winning paper discusses a recently proposed new fiber orientation model for improving the previously developed models for long fiber-reinforced thermoplastic (FRT) composites with regard to interaction and diffusion of the fibers immersed in a matrix. This Improved Anisotropic Rotary Diffusion model combined with Retarding Principal Rate (iARD-RPR) model has been demonstrated to describe changes in fiber orientations well, whether treating short fibers or long fibers. This was demonstrated in a study using 40 wt% glass-fiber immersed in a polypropylene matrix that was injection molded in a center gated disk. Good correlation was achieved between predicted fiber orientation distribution through the thickness and experimental results.



Tseng received his Ph.D. degree in Applied Chemistry from National Chiao-Tung University (NCTU) in Taiwan in 2008. Under the direction of professors Rong-Yeu Chang and Jiann-Shing Wu, Tseng's major research interests focused on molecular simulations, involving molecular dynamics (MD), Monte Carlo (MC), and dissipative particle dynamics (DPD) methods, with applications to predictions of nano-thermodynamic and nano-rheological properties of polymer materials. Many of his non-equilibrium molecular dynamics simulation (NEMD) studies for sheared n-hexadecane fluid have been published in the *Journal of Chemical Physics*. In his current job as program manager in the R&D Division of CoreTech, Tseng's main research areas are composite and polymer processing, polymer rheology and viscoelasticity, and molecular simulations, and he is responsible for theoretical development with a focus on the prediction of fiber orientation during processing of fiber-reinforced composites. Recently, he has expanded his research into new areas including powder concentration and particle migration for metal injection molding (MIM).

Please join us in congratulating all three authors (or their representatives) for their hard work and dedication to excellence in technical writing, and be sure to catch their presentations during this year's show.