POLYMER PROCESSING SOCIETY

Additive Manufacturing Webinar

Friday, January 15, 2021

Begins at 7:30 AM US EST (New York)

Schedule of Talks (All times are New York times)

7:30 AM: Speaker set up

7:40 AM: Opening remarks

7:45-8:15 AM: ***Arburg Freeformer for Medical Applications*****, Clemens Holzer, University of Leoben, Austria.** The manufacturing process of medical products by means of additive manufacturing needs integration into a clinical process chain. This necessitates exact data acquisition of process-relevant information and influencing factors. Suitable parameters must be defined for material/system combinations on the basis of the Arburg plastic free-form technology.

8:15-8:45 AM: ***Powder Bed Fusion of Polymers - Technology Progress and Materials Research*****, Manfred Schmid, Inspire AG**. Additive manufacturing (AM) of polymers is the future brick in the transformation to digital production (Industry 4.0). Among all 3D printing technologies, powder bed fusion (PBF) technologies via laser sintering (LS), multi jet fusion (MJF) or high-speed sintering (HSS) are the primary technologies that transfer 3D printing (prototyping) to AM.

8:45-9:15 AM: ***Conformal Additive Manufacturing of Soft Pressure Sensors*****, Jae-Won Choi, University of Akron**. This talk introduces a conformal additive manufacturing process and polymeric materials for stretchable pressure sensors. Conformal additive manufacturing combines direct-ink writing and rheology-controlled inks to create a 3D structure on a freeform surface.

9:15 – 9:30 AM: Presentation by XPlore

9:30-10:00 AM: ***Fused Filament Fabrication Melting Model*****, Tim A. Osswald, University of Wisconsin-Madison**. An analytical melting model inside the nozzle of a fused filament fabrication process is introduced. The model presents the limiting case scenario where the maximum melting rate is controlled by the applied force.

10:00-10:30 AM: ***Core-shell Structured Filaments For Fused Filament Fabrication Three-dimensional Printing To Maximize Mechanical Performance And Dimensional Fidelity To Digital Model*****, Miko Cakmak, Purdue University.** Poor adhesion at filament bonding interfaces in Fused Filament Fabrication (FFF) leads to poor mechanical properties of printed parts. A core-shell structured filament in FFF 3D-printing alleviates the above concern – the exterior layer provides interfacial adhesion; the core layer provides strength.

10:30-11:00 AM: ***Modeling of the Fused Filament Fabrication (FFF) Additive Manufacturing Process*****, J.F.Agassant, MINES-ParisTech**. The presentation covers contributions of process modeling to understanding of relationships between polymer data, process parameters, and printing ability. The talk will focus on the two first steps of the process: (i) melting of the polymer filament in the liquefier, (ii) deposition of the polymer strand on the substrate.

11:00 – 11:30 AM: Panel discussion