Injection Molding Can Leave You Stressed And Warped. Moldflow Can Help

Zhiliang Fan

Senior Principal Research Engineer, Autodesk

Speaker Biography:

Zhiliang is a senior principal research engineer in the Autodesk simulation group. He has 30-year research and development experience in computer-aided engineering. After he obtained his Ph.D. in 1991, he worked in Tongji University(Shanghai), Tsinghua University(Beijing), University of Salford(Manchester) and Imperial College(London). Zhiliang joined Moldflow Pty. Ltd. in 1996. Since then, he has been a principal developer for Moldflow's shrinkage, warpage and stress products, and handled numerous real-world warpage simulation cases. Zhiliang has more than 35 published works—including journal papers, book chapters, and conference papers—and holds a patent.

Description:

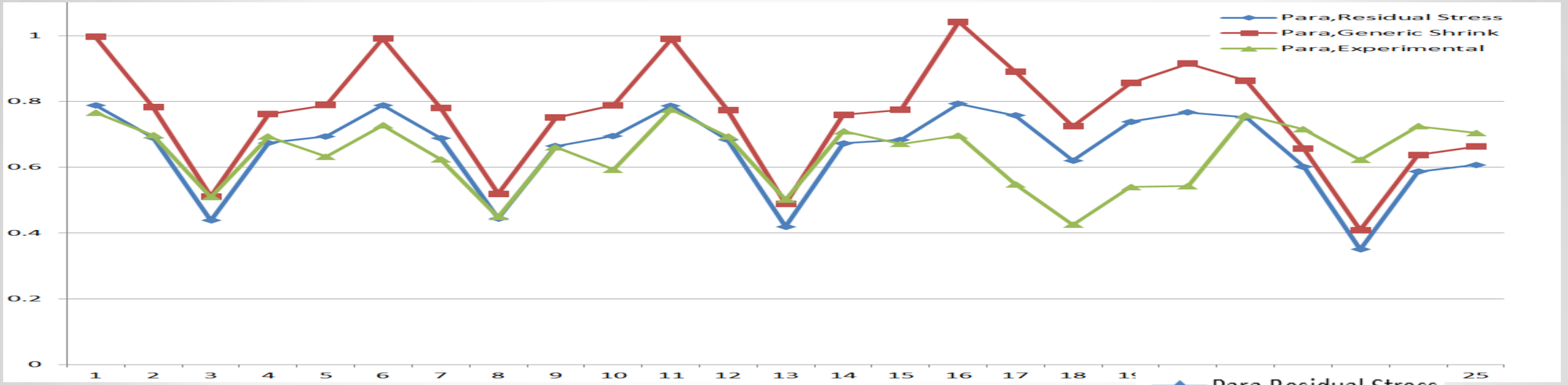
During this class we will address major issues related to 3D shrinkage and warpage analysis in injection molding. We would like to start with an introduction of mechanism of shrinkage and warpage. We will discuss the generic shrinkage model and its limitations. We will also present 3D thermo-viscous-elastic residual stress model and thermo-viscoelastic residual stress model. Finally, we will explore some advanced topics, such as corner-effect, in-mold shrinkage, stress relaxation, buckling, and large deflection analysis.

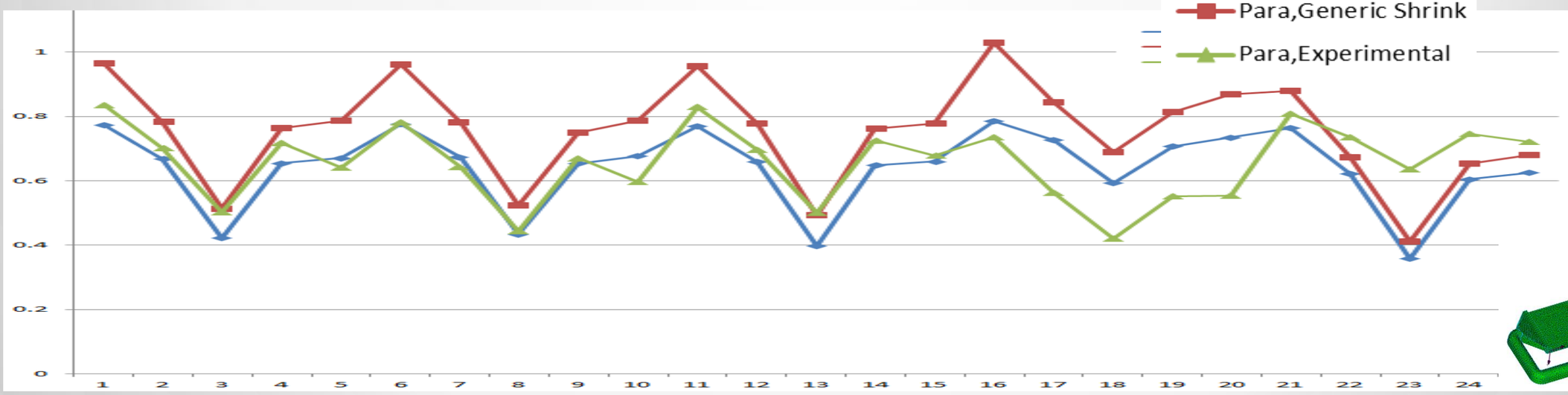
Warpage: Related to nearly every part of Moldflow technologies

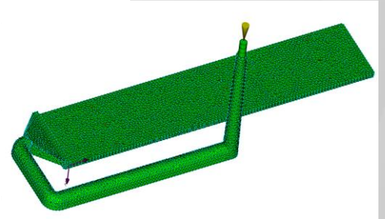
Complexity:

Material data	Pressure/temperature solution
Processing condition	Fiber orientation
Geometric modelling	Composite property
Physical modelling	Shrinkage model
Mesh quality	Structural solver
Solidification criterion	Mold deformation
Gate freezing time	Density relaxation
Cooling rate effect	Validation
Crystallization	……

MF Tagdie Models: Unfilled materials

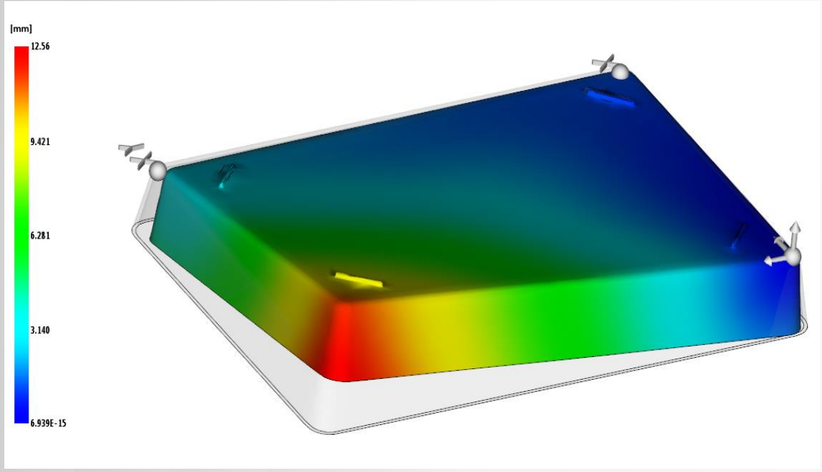




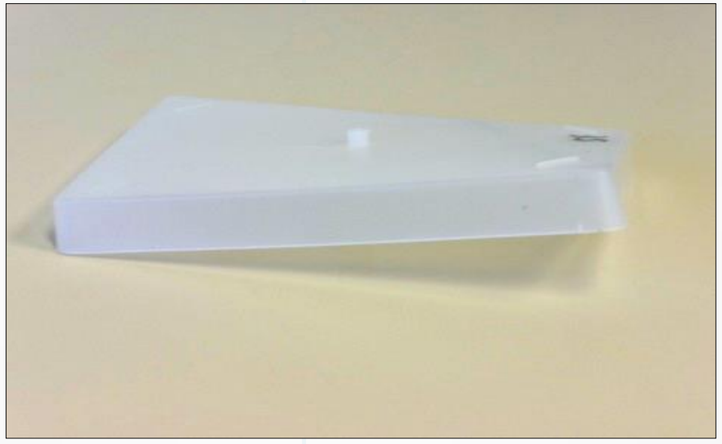


MF Lab Tray

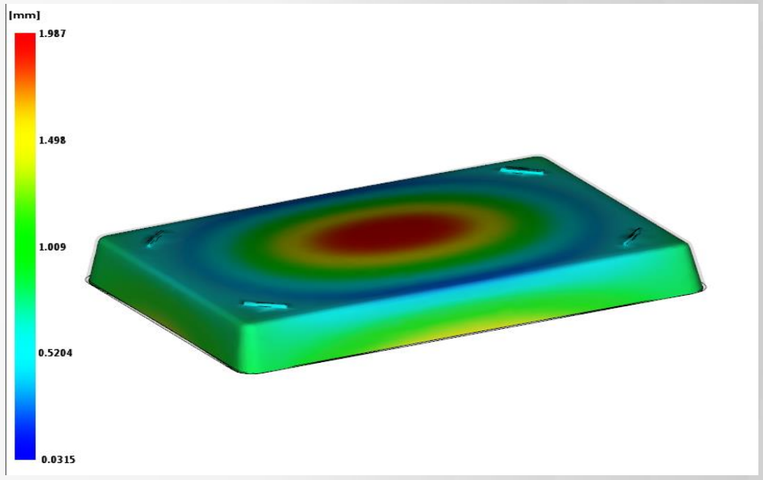
Residual Stress Model



Experimental Result



Generic Shrinkage Model



Conformal Cool Box:

PA6 30% GF - BASF Ultramid B3WG6 BK00564 [MAT5460]