

# Stress and Strain of Film on Deformed Polymer-metal

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## Abstract

Polymer-metal is a kind of new composite materials rather than traditional metal packaging materials. It has both features of polymer film and sheet metal. However, the polymer film will damage in the sheet metal forming process. Therefore, we try to established a sheet metal forming model with punch and die in the study, based on solid mechanics module of COMSOL Multiphysics® software. We analyze the influence of die gap, die R angle, punching speed and other parameters on the stress and strain of the film in forming process(Fig. 1)

The sheet metal forming model without film have been established. We are adjusting and optimizing the parameters now. Next, we plan to add the film and analyze the stress and strain of the "polymer-metal" in the sheet metal forming process.

## Reference

- Van den Bosch MJ et. al , Schreurs PJG, Geers MGD, van Maris MPFHL (2008) Mech Mater 40:302. doi:10.1016/j.mechmat.2007.09.002  
Van den Bosch MJ et. al , Schreurs PJG, Geers MGD (2009) J Mater Process Technol 209:297

## Figures used in the abstract



Figure 1: 冲压模型-2D

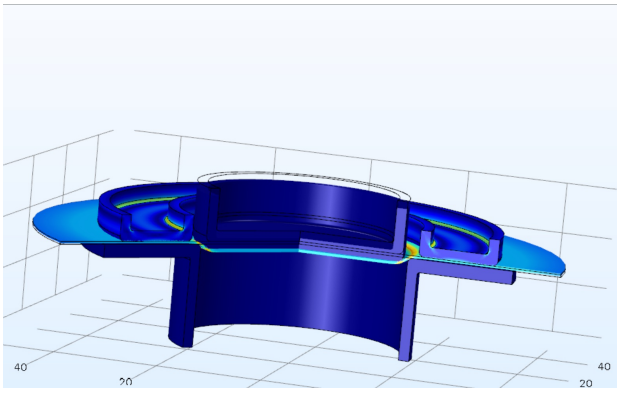


Figure 2: 冲压模型-3D

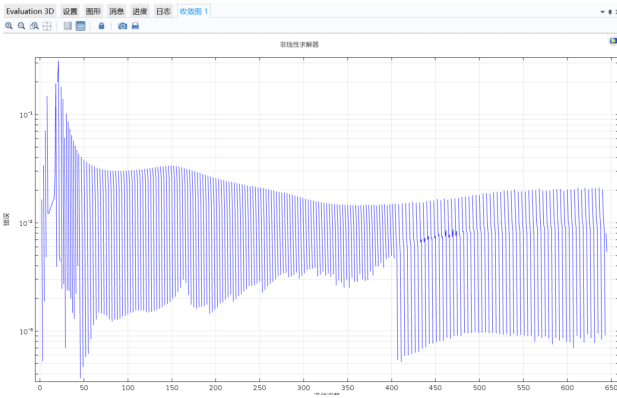


Figure 3: 收敛图