Special Issue

Recent Research on Superplastic Forming of Metals and Alloys

Message from the Guest Editor

Superplasticity is the property exhibited by worked/processed metals and alloys which involve, under tensile loading, very high elongation without necking until failure. Superplastic forming (SPF) is mostly an excellent technique used for gas-forming complex-shaped sheet components based on superplastic metals. A major limitation of SPF is the slow forming time due to the material's intrinsic characteristics. This long cycle time is not a problem for small-volume production as in the aero-industry, and SPF is very advantageous in forming Ti alloys which are hard to deal with using other manufacturing processes. However, a car body using aluminum alloy sheets that adopt SPF can only be practical when a forming cycle time is reduced. Due to this demand, quick plastic forming (QPF) has evolved and General Motors Corporation led the way in developing models with AA5083, such as Chevrolet Malibu. Quick plastic forming is essentially a pseudo-SPF process that uses a slightly lower processing temperature and higher gas pressure. In recent years, attempts to employ QPF in manufacturing consumer products other than car bodies, such as smart-phone cases [...]

Guest Editor

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