



Application of Advanced Metal-Forming Technology in Light-Weight Alloys

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Message from the Guest Editors

Light-weight alloys have important roles in modern industries. In recent years, advanced light-weight alloys have been developed to satisfy the increasing demand for mechanical behavior and in-service performance (fatigue, creep and damping, etc.). Generally, the high performance of these advanced light-weight alloys is realized via the control of grain structure and phases (or precipitations) of various fractions, shapes, and sizes. Additionally, components with complex profiles are always needed to fulfill the designated structure function.

In fact, the combination of advanced light-weight alloys and complex-shaped components is of great significance and high efficiency for further weight reduction and performance improvement, whereas inferior ductility and poor formability are usually found in advanced light-weight alloys due to a constrained relationship between strength and ductility. Meanwhile, the complex shape of components further increases the difficulty in the forming process.

Thus, the development and application of advanced metal-forming technology in light-weight alloys has become an essential research topic.





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