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Metal forming technologies for aerospace and automobile parts

This talk is mainly about the current situation of the manufacturing technologies of aircraft and automobile parts. Aluminium alloys have been utilized in these industries as a significant material. And there are a lot of issues in its manufacturing. The application of aluminium alloy and some examples of the solutions to those issues will be introduced. Meanwhile, this talk will also mention kinds of forming processes in manufacturing the aircraft or automobile parts. In these forming processes, it is necessary to improve the tribological properties of the tools by applying lubricants or modifying the tool surface. Therefore it is important to evaluate the tribological properties experimentally. In this talk, the designs and characteristics of the several friction testers are described. Not as relatively clear as in the cold working process, the tribo-characteristics of metal under forming at elevated temperatures have not yet been well understood due to the complex nature of thermal, microstructural interaction, or process parameters. In order to investigate these characteristics, tribotesters must be developed and tested. Among the tribotesters presented here, some have been well applied for cold working, while the others provided great potential to be used to characterize friction and wear at high temperatures. Furthermore, some new lubricants and others that can be applied for the cutting and forming of hard metals, such as Titanium and heat-resistant alloys, are also introduced. This talk provided a review on tribo-technology for metal forming and showed the potential in further investigations and the innovation in manufacturing aero part.

Biography

Kuniaki Dohda is a Professor at Northwestern University, received Doctor of Engineering from Nagoya University in Japan in 1986. He used to be a Professor at Nagoya Institute of Technology and Gifu University in Japan. He published more than 200 papers on his field and 10 books on micromanufacturing, metal forming and tribology in manufacturing. Currently, he is the general chair of IFMM, IRGTM, the Chair of Academic Advisory Board of TTA(Thai Tribology Association) and the Fellow of ASME, JSME and JSTP. And he is a Editorial Board Member of some international journals such as Friction and editor-in-chief of the Journal of Microfabrication.

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