

The Department of Mechanical Engineering/College of Engineering and Applied Sciences  
Stony Brook University

## Mechanical Engineering Seminar



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**Lecture Title: Technology Chain for CNC-EDM of Shrouded Turbine Blisk**

Friday, March 16, 2012, 2PM, Room 173 Light Engineering

### Abstract

Shrouded turbine blisks and other turbine engine parts which have similar geometric features, such as OGV, shrouded impeller and so on, are widely used in the advanced rocket engines and aircraft engines. Due to their integral structures, the semi-closed flow channels are very difficult to machine. In addition, the material of turbine blisks is normally the nickel based high-temperature alloy, it makes the machining performance of traditional cutting even worse. Therefore, multi-axis CNC electrical discharge machining (EDM) is preferably applied for manufacturing this kind of parts. This talk presents a systematic solution for implementing above mentioned machining. The technology chain consists of a series of machining and related technologies, such as specific CAM software, 5 axis CNC EDM process, 5 axis EDM-CNC software, tooling system, etc. Several cases of typical shrouded structure machining will also be introduced as verifications.

### Biography

Professor Zhao received his B.Sc., M.Sc. and Ph.D. degree from the Department of Mechanical Engineering, Harbin Institute of Technology in 1982, 1984 and 1989 respectively. He now serves as a professor in the School of Mechanical Engineering, Shanghai Jiao Tong University. He is also the vice chairman of the Chinese Nontraditional Machining Society.

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