



UNSW
SYDNEY



Laboratory for Precision and Nano Processing Technologies

The Laboratory for Precision and Nano Processing Technologies is a leading research unit equipped with state-of-the-art facilities for material testing, characterisation and manufacturing.

Competitive advantage

Expertise across a range of areas, including:

- Process innovation for manufacture and optimisation of advanced material devices and structures
- Lightweight design of components and structures, including lightweight vehicles
- Prediction/control of friction, wear and lubrication
- Durability and optimisation (fracture, fatigue, wear rate and friction prediction and residual stresses)
- Microstructural design and manufacture of materials with tailored properties and functions, and
- Nano and precision machining and thermal forming

Impact

- New materials and manufacturing technologies to solve problems across industries

Successful applications

- Residual stress determination in thin film systems (The Silanna Group, Australia).
- Control of lubrication in cold strip rolling of metals (Baoshan Iron & Steel Co Ltd, China)
- New superabrasives cutting tool technology (Ringwood Superabrasives Australia).
- Surface integrity characterisation of sapphire wafers for wireless and fibre optic semiconductor industry (Peregrine Semiconductor Australia)
- Heat conduction characterisation of buried insulation layers in silicon-on-insulator systems (ARC Linkage Project with Silanna Semiconductor Australia)
- Machining-induced damage mechanisms in KDP crystals (ARC Discovery Project)
- High speed cold rolling of tinplate steel: lubrication performance and its assessment method (Baoshan Iron & Steel Co Ltd, China)
- Automated manufacture of advanced composites (ARC Training Centre)
- Scaling microfluidics for cell manufacture (ARC Linkage Project)

Capabilities and facilities

- The lab has extensive facilities for the design, manufacture, processing and testing of new materials and structures.

More Information

Scientia Professor Liangchi Zhang

School of Mechanical and
Manufacturing Engineering

T: +61 (0) 2 9385 6078

E: Liangchi.Zhnag@unsw.edu.au

UNSW Knowledge Exchange

knowledge.exchange@unsw.edu.au

www.capabilities.unsw.edu.au

+61(2) 9385 5008