

# A high performance porous Ti-based nanocomposite for hip joint Prostheses

## 人工关节用高性能钛基多孔材料

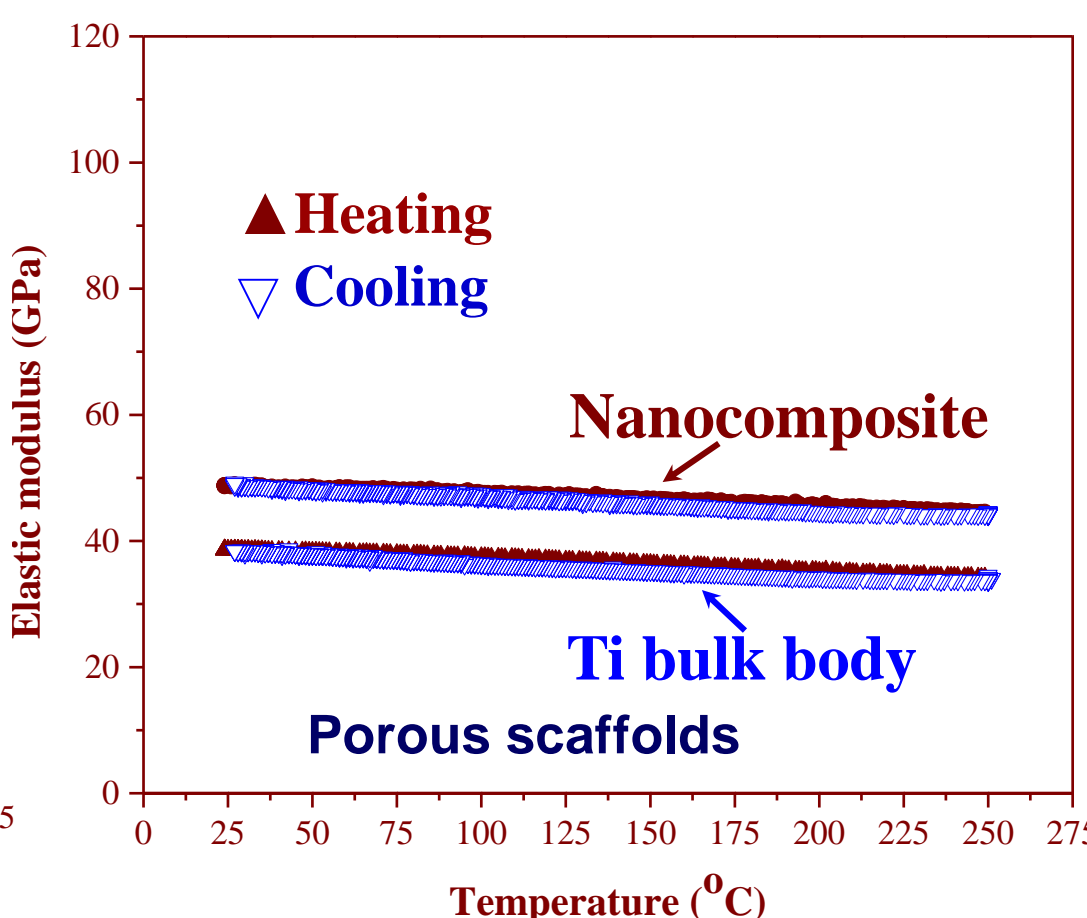
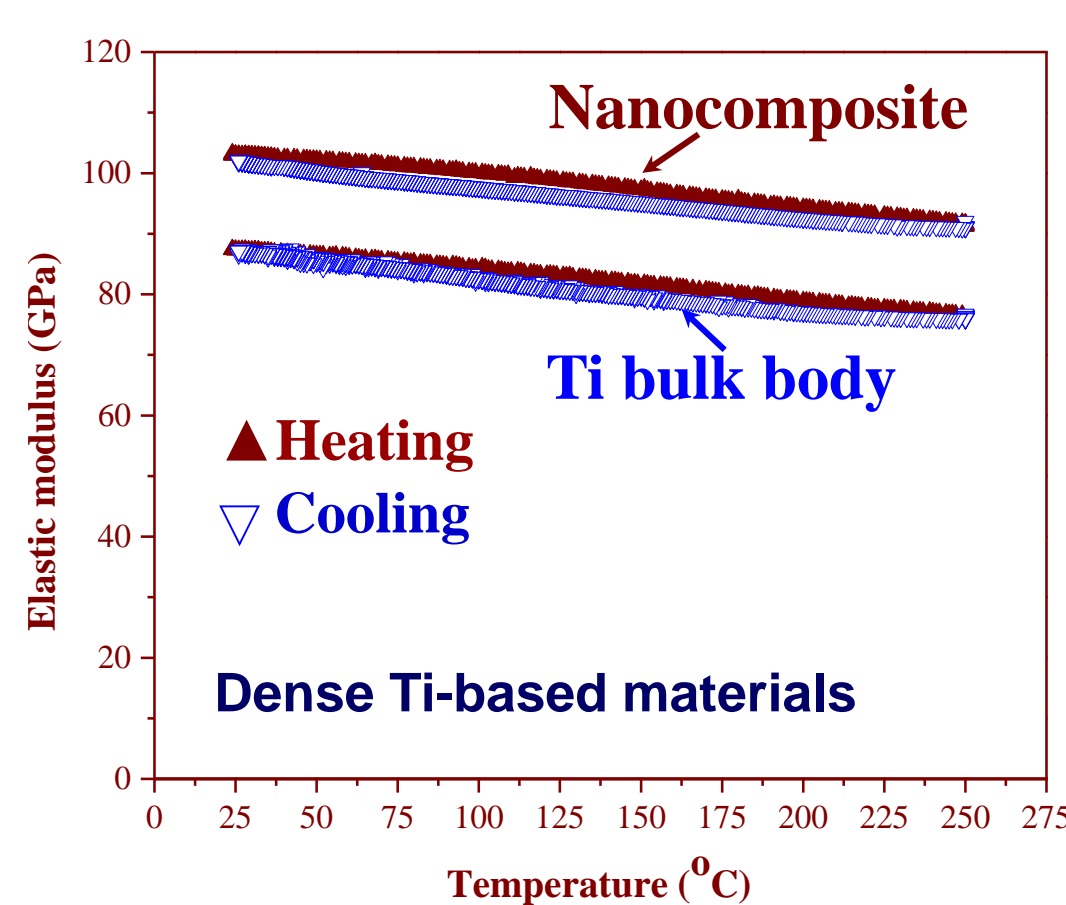
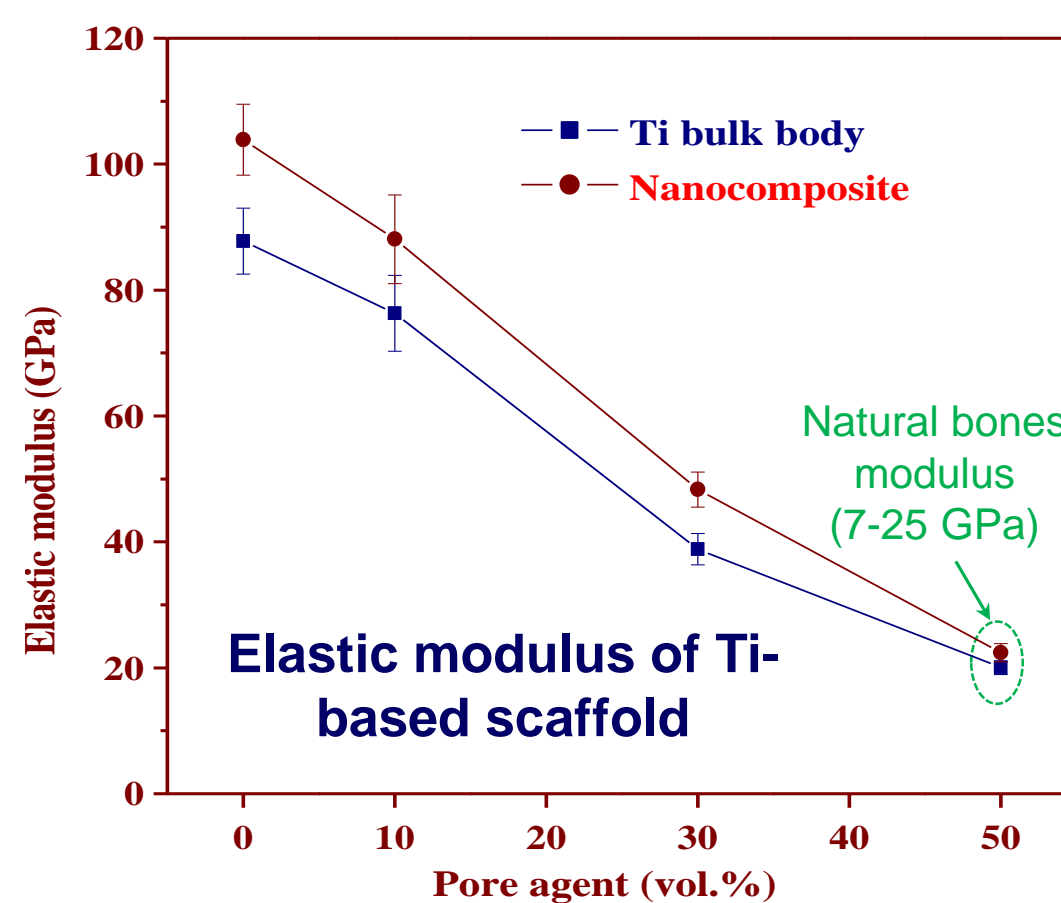
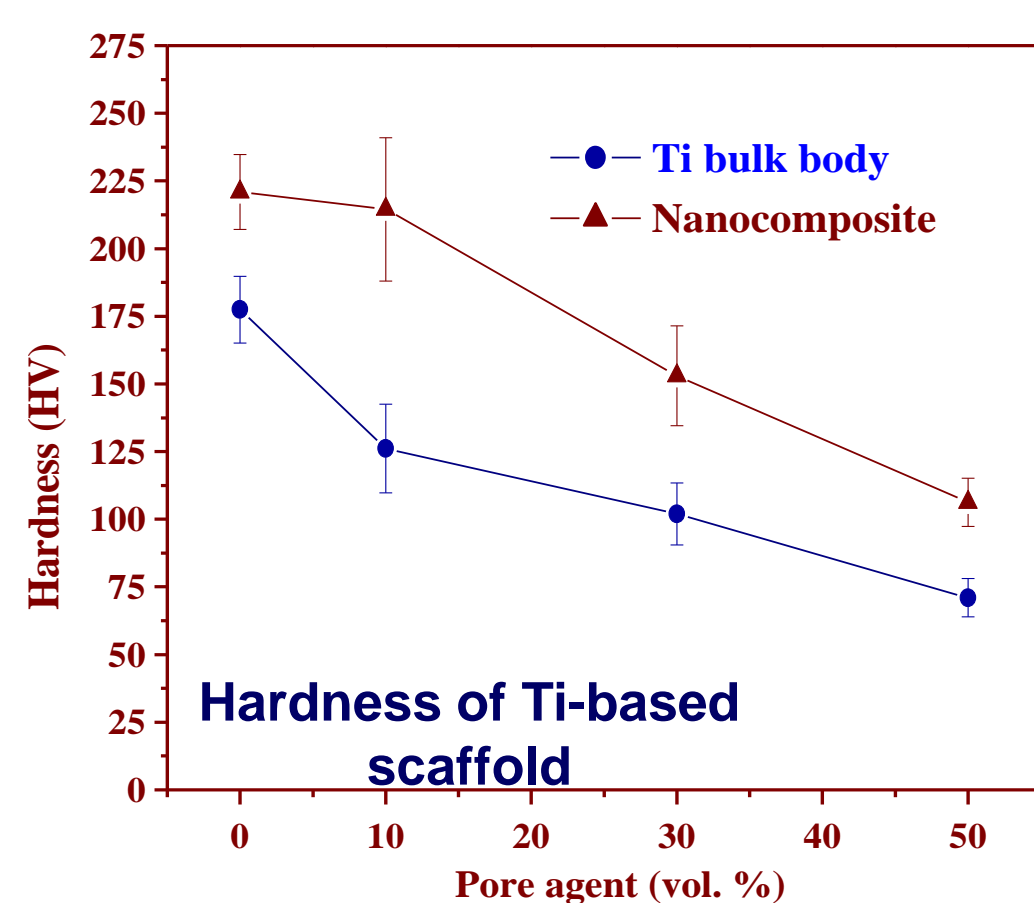
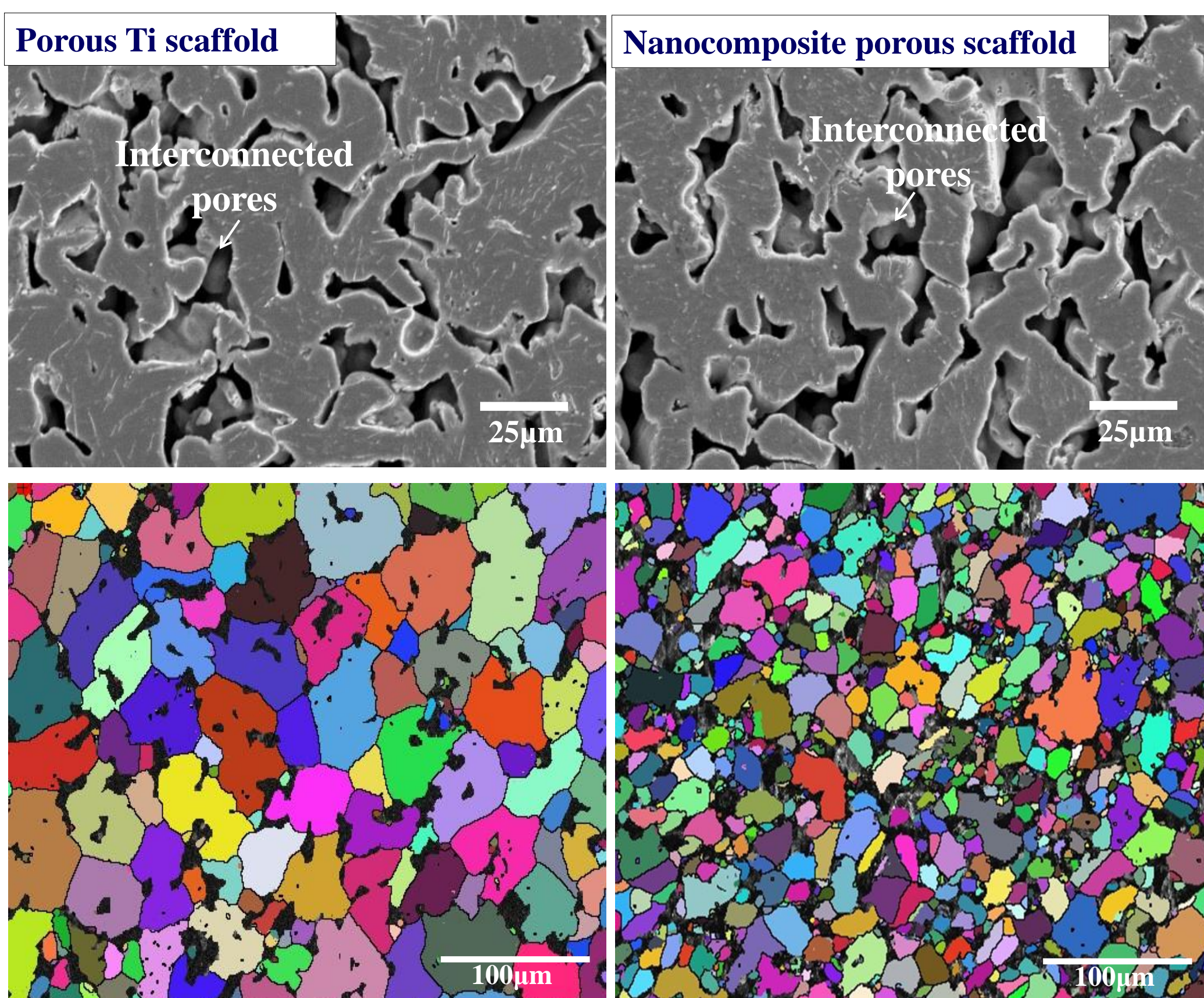
Engineering/Laboratory for Precision & Nano Processing Technologies

### ABOUT OUR TECHNOLOGIES

#### Objectives

The overarching aim is to introduce new materials and cost-effective technique that will be central to the design and manufacturing of both bio-compatible and mech-compatible porous scaffolds for load-bearing implants

#### Bone-like nanocomposite matching the material properties of human cortical bones



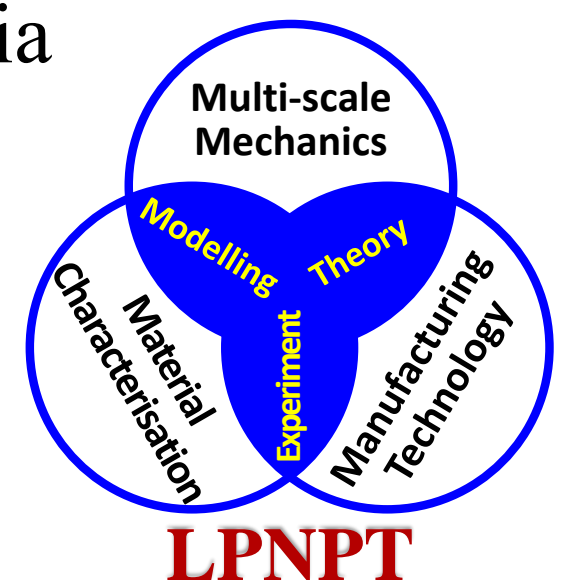
### SELECTED RECENT PROJECTS and SUCCESSFUL APPLICATIONS

#### Some Previous & Current Industry Related Experience

- An innovative manufacturing technology enabling new generations of hip joint prostheses
- An integral approach enabling the defect-free manufacture of microlens arrays
- Automated manufacture of advanced composites
- Development of new super abrasives cutting tool
- Integrated precision machining of complex profiles
- Novel cutting picks for mining industry and an Australian standard.
- A new roll surface treatment technology towards lower wear and higher fatigue life
- High speed cold rolling of tinplate steel
- Multi-scale fabrication facility for complex 3D surface

#### Some Previous & Current Industry Partners

- Bao Steel China
- Bradken Australia
- Cochlear Australia
- CSIRO Australia
- Hard Metals Australia
- Silanna Australia
- KF Great Wall Prestress China
- Peregrine Semiconductor Australia
- Ringwood Superabrasives Australia
- Boeing Australia
- Calimmune Australia
- CRC-ACS Australia
- Eyecon Australia
- Shuangshuzi Coal China
- Sola Australia



### LAB INTRODUCTION

Lab LPNPT is led by Scientia Prof. Liangchi Zhang. This is a world-leading laboratory, equipped with advanced research facilities for testing, characterisation and manufacturing. The team's research covers a broad range of frontier areas - both the fundamentals of technologies, and their direct applications to industry. The research team has published over 550 academic papers and 20 books, and has about 10 patented technologies. The team has established close collaborations with industry partners. The outcomes have led to substantial improvements in production efficiency, energy and resource savings and green manufacturing for industry partners, which has enabled the industry to achieve significant economic benefits, in tens of million dollars per annum.