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## International Intern joins the TiDA team.

TiDA is fortunate to welcome Nadine Rosenloecher, one of the top students from the Dresden University of Technology, to New Zealand on a six month internship.

The placement is a reflection of the ongoing relationship from Fraunhofer Society Dresden and the Dresden University of Technology, Germany, where Nadine studies Materials Science with a focus on powder metallurgy.

While in New Zealand, Nadine is working on projects relating to surface finish and Ti alloy powder consolidation techniques.

Nadine is very much enjoying the warmer weather, and looking forward to her first Summer Christmas and the Bay of Plenty lifestyle.



**Nadine working on the Grinding and Polishing Machine**



The team at TiDA would like to wish all our members, clients and partners a very happy and safe festive season.

## TiDA joins IRANZ.



TiDA has recently joined the Independent Research Association of New Zealand.

Its members undertake scientific research, development and technology transfer.

Members include Aqualinc Research Ltd, BRANZ, Cawthron Institute, CRL Energy Ltd, Heavy Engineering Research Association (HERA), Leather & Shoe Research Association (LASRA), Lincoln Ventures Ltd, Opus Central Laboratories and Transport Engineering Research NZ Ltd (TERNZ).

IRANZ member organisations make vital contributions to a broad range of scientific fields, and offer an important complement to university-based and Crown Research Institute research.

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## Consolidation of NiTi Alloy Powders by Powder Compact Extrusion Paper

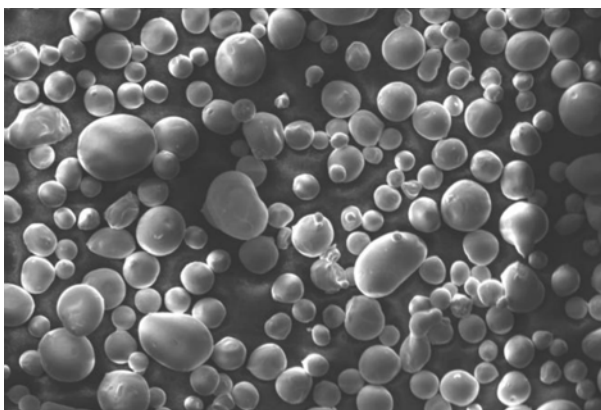
A TiDA research project is underway, focussing on Powder Compact Extrusion of NiTi Alloy powders.

Nickel-titanium alloy near the equi-atomic concentration is well known for its shape memory effect (SME), and possess excellent shape memory properties, good mechanical properties, such as good ductility at room temperature, good corrosion properties in sea water, excellent biocompatibility and various tribological applications.

Super-elastic NiTi alloy is widely used for several applications, such as surgical staples, orthopedic implants, orthodontics, endoscopic and endodontic instruments.

The microstructure and mechanical properties of extruded and hot pressed parts of the samples are being characterised using scanning electron microscopy (SEM), energy dispersive X-ray spectroscopy (EDS), electron backscatter diffraction (EBSD), microhardness testing and tensile testing. As part of the project we are looking at the hardness of the extruded bars and considering ways to increase hardness while maintaining the super elastic properties. The average tensile strength for the NiTi alloy extruded bars to date are recorded at 900 MPa.

Powder compact extrusion (PCE) and powder compact forging (PCF) are thermomechanical powder consolidation (TPC) processes employed for the production of fully dense materials with improved performance.



NiTi powder supplied by Titanox

Its main advantage over other processes like hot pressing (HP) and hot isostatic pressing (HIP) lies on the high shearing stresses generated.

Therefore, densification and interparticle welding mechanisms are activated, leading to excellent mechanical properties.

TiDA members can contact [angela@tida.co.nz](mailto:angela@tida.co.nz) if you would like to request a copy of this Paper, when it becomes available.

## Titanium Report now available to the New Zealand Sector

### Report promoting technology advancements in the New Zealand Medical and Dental Sectors.

Commissioned reports are available to the Industry and Research sectors which will further improve titanium powder knowledge and technology development.

The first report has now been distributed, which is specific to the New Zealand Medical and Dental Applications. This report provided a detailed analysis of the latest research into titanium alloy powders and specific applications to this industry.

The report covers Ti Applications in the medical field, World Trends, selected Implant Applications and future perspectives and recommendations for New Zealand industry.

To purchase this Medical and Dental Report, please contact [angela@tida.co.nz](mailto:angela@tida.co.nz).

## Research Officer obtains University of Waikato status.

Dr. Aamir Mukhtar, TiDA Research Officer, has been appointed a Research Associate with the University of Waikato.

The Titanium Industry Development Association (TiDA) congratulates the achievements of Dr. Mukhtar in gaining the Research Associate appointment from the School of Engineering.

Dr. Mukhtar has been with TiDA since its inception, and has been the leader in many positive research outcomes.

Dr. Mukhtar specialises in the consolidation of ultrafine grained and nanostructured metal matrix composite powders and works closely with Professor Deliang Zhang's metal research team at the University of Waikato.



Dr Aamir Mukhtar

## TiDA Annual General Meeting.

The TiDA AGM will be held on Friday 9 December 2011.

TiDA welcomes any interested parties to attend the AGM, starting at 1.30pm, which will be held during the WaiCAM Symposium (Waikato Centre for Advanced Materials).

The WaiCAM Symposium, Industrial Applications of Titanium Powder Metallurgy and Titanium Coatings, will be hosted by the University of Waikato.

The symposium will focus on industrial applications of titanium and titanium alloy powder coatings which are currently being intensively researched.

The symposium will discuss the fundamental issues and challenges that researchers and practitioners face in applying the powder metallurgy and powder coating technologies to produce more titanium and titanium alloy products and expand the market for using more titanium in various industries.

If you are wishing to attend to TiDA AGM, please email [angela@tida.co.nz](mailto:angela@tida.co.nz) for more details. The contact for the Symposium is Dr Asma Salman on [asma@waikato.ac.nz](mailto:asma@waikato.ac.nz) or visit the website on [www.sci.waikato.ac.nz/waicam](http://www.sci.waikato.ac.nz/waicam).

## Powder Processing, Consolidation and Metallurgy of Titanium Conference.

This International Conference will take place on 5-7 December 2011.

This event, to be held in Queensland, will be one of the largest ever international gatherings specifically related to powder metal titanium.

There will be more than 80 papers presented, from over 14 countries. The event is co-sponsored by TiDA and four material societies worldwide.

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