

# PAUL D. EWART

## Education:

NZ Certificate of Mechanical Engineering, Waikato Polytechnic, New Zealand 1999.

MSc of Materials Technology, University of Waikato, New Zealand 2007.

PhD of Materials and Process Engineering, University of Waikato, New Zealand 2015.

## Why did you study powder metallurgy/particulate materials?

My introduction to powder metallurgy (PM) was during my time at Waikato Polytechnic, the sum content being an hour-long lecture on the use of press-and-sinter to produce machine tool cermets.

Later, as a technician at the local university, I took masters level papers on the properties and processing of materials to help support graduate research in the metallurgy labs. As I became more familiar with materials processing, I also increased my involvement in the graduate and postgraduate programs.

In 2010 a \$10M grant awarded to the titanium research group led by Professor Deliang Zhang pushed his fundamental research to a pre-commercial focus. One of the targeted processes for investigation was powder injection molding (PIM), and a scholarship opportunity was offered to potential masters and doctoral candidates. Since I had completed my masters degree and had wanted my own research project to lead I applied for the project. (How I would manage financially with a wife and two children on a scholarship offering about 1/3 of my then salary I had yet to determine.)

After writing what turned out to be an excellent project proposal and research plan I was accepted into the University of Waikato doctoral program. Fortunately, moral support from the titanium group and a breakthrough early in the research enabled me to gain two further scholarships (one a Fulbright fellowship) and a government grant.

In summary, I studied PM to support graduate

research. I continued to study due to good fortune with funding and the help of my advisors, and I will continue to study PM to support the commercial interests I hold and the students I now supervise.

## When did your interest in engineering/science begin?

I made many contraptions as a boy and spent hours with the family Meccano® set. Later, I built many trolleys (soapbox racers?) and other structures, to my own designs—never traditional models. Engineering, technology, and physics were my fall-backs at school and helped me to understand math, while biology and social studies seemed hopeless.

## What was your first job in PM? What did you do?

I was employed at the local university to oversee day-to-day operations of a new, large-scale laboratory facility being built. The facility consisted of four research areas covering fluids and energy technology, food processing technologies, bio-technologies, polymer and composite materials, and metallurgy

and particulate materials. The intention of this facility was to bridge the gap between laboratory research and commercial activity. Each of the six laboratories was about 30-m length x 9-m across x 7-m height to enable pilot scale plant to be used in the research.

My role was to oversee the facility, advise on equipment purchase and maintenance, facilitate teaching labs for undergraduate classes, supervise technical aspects of the graduate research, manage external testing and small contract investigations, and support internally and externally funded research.

The metallurgy and particulate materials lab had a range of equipment that was totally foreign to me. There was a pilot scale powder atomizer, ball mills, roller mills, disc mills, grinders, polishers, sample prep kit, gloveboxes, special powder handling rooms, many furnaces, and an array of instruments for characteriza-



*Academic/Technical Director, Waikato Institute of Technology/AME Powder Technologies, 18 Gerrand Place, Queenwood, Hamilton 3210, New Zealand, [pewart@fulbrightmail.org](mailto:pewart@fulbrightmail.org)*