



Graduate profiles

Department of Materials Engineering



Mark Hodge, CEO
Defence Materials Technology Centre

Materials Science and Materials Engineering Alumni

Jenny Law

“Graduating as a materials engineer did not give me all the answers, but it certainly taught me how to find the answers. Engineers are great problem-solvers. We love a challenge.”

One of the challenges for Jenny Law (1995) is convincing people that research and development is not just about scientists in white coats.

“It’s also about the incremental improvements, trying new ideas, pushing the boundaries,” says Jenny, R&D coordinator at Nissan Casting Australia Pty Ltd.

Jenny currently works part-time at Nissan Casting, helping coordinate the research and development activities.

“We are working closely with CSIRO on developing a new vacuum system, environmental improvements, reducing

soldering and improving die-life,” she says.

Jenny also has a BA(Japanese)/BE(Hons). “I wanted to work in the field of manufacturing as an engineer for a Japanese company,” she says.

“Life in the Materials Engineering department at Monash was great,” Jenny says.

“Being a small department, compared with the other engineering disciplines, enabled us to get to know well the other students, lecturers and postgraduates,” she says.



Alex Shekhter

Studying materials engineering at Monash was a life-changing experience for Dr Alexandra Shekhter (2003), a research scientist at the Defence Science and Technology Organisation. “The environment in the department,” Alex says, “was extremely positive and inspiring.”

“There were lots of discussions, seminars, jokes and laughs,” she says.

These days Alex Shekhter, who works in the Air Vehicles Division of the Metallic Airframes Materials branch at DSTO, is putting that learning into practice.

“I’m working on the effects of corrosion on the structural integrity of airframe materials, doing technical risk assessment for new defence acquisitions, and I am also on the lookout for new advanced materials and technologies for military aircraft,” Alex says.

David Monk

“Monash was a friendly environment to work in – the staff always had their doors open if you had questions or concerns. Having a student room for the final year developed a great team environment.”

David Monk (1998) is Senior Materials Reliability Engineer at Mobil Refining Australia, in Altona, Victoria. “I am team leader of a group that is responsible for the reliability and integrity of all fixed equipment at the Mobil oil refinery,” he says.

“We develop and implement programs and processes which monitor and assess the condition and risk of plant, in the area of

materials, corrosion and inspection. The course obviously convinced me to become a materials engineer in industry, because it clearly highlighted that there was a whole world full of materials-related challenges, the oil industry certainly being one of them,” David says.

David originally chose materials because it was the engineering discipline with a science edge.

Michelle Katz

“Materials Engineering is in our everyday lives” Michelle says. “Look at how far planes fly now, fuel efficient cars and smaller computers are just some basic examples. Many people have heard about metallurgy, but not about polymer and ceramic engineering.”

Before leaving work to look after her two young children, Michelle Katz (1995) worked in customer service and technical sales at Webforge, a specialist manufacturer of metal flooring and associated products.

“My role involved detailed understanding of materials in the building industry and reading drawings – a breeze after a materials engineering degree,” Michelle says.

Peter McKenzie

“I always wanted to work in industry, even before I started the Monash course,” says Peter, who completed his PhD in 2007.

For Peter McKenzie (2003), life after Monash has been a melting pot. Peter is a graduate process engineer at Portland Aluminium, where he works in Smelting Services, which monitors and, when necessary, repairs the fume-capture system that extracts gaseous products from the electrolytic cells in the plant’s potrooms.

Peter also works in the ingot mill, where molten aluminium is cast into 22.5 kg ingots. He enjoys working with the operators and crews at the plant. “Providing engineering support can be extremely rewarding when something is implemented to further streamline the process and make their job easier,” he says.

His job includes reviewing engineering drawings, using key performance indicators to evaluate the performance of the ingot mill, contributing technical expertise to projects, chairing meetings, and providing performance updates on the mill’s performance to other technical staff.

Peter’s future was set when he attended career days held at Monash.

The meetings offered him the opportunity not only to speak with people from industry about future employment prospects, but also to understand how the topics taught as part of his materials engineering degree related to working in industry.

Campbell Thomas

“The close day-to-day interaction with my fellow undergrads formed some life-long friendships. The academics were always willing to assist and generally showed an excellent level of professionalism in their lectures.”

“I’d never heard of materials engineering until first year but I realised I had a strong interest in products used out in the real world. The first-year subject helped cement my decision,” Campbell Thomas says.

Campbell is a technical service specialist with Genos Pty Ltd, Australia’s only manufacturer of polyethylene, the raw material used in everyday items such as packaging and automotive and industrial components.

“I’m the technical interface between our plants and customers, providing technical support on the many grades of polyethylene we produce.

“I enjoy the variety of customers, both interstate and local, with which I interact on a regular basis, running product trials and so on. I’ve also had the opportunity to travel overseas and meet on a regular basis with our parent company, Exxon Mobil, in the US, he says



Katherine Dean

“The idea that the science I am involved in, may one day make a significant impact on the environmental footprint we make as a society is a key driver for me.”

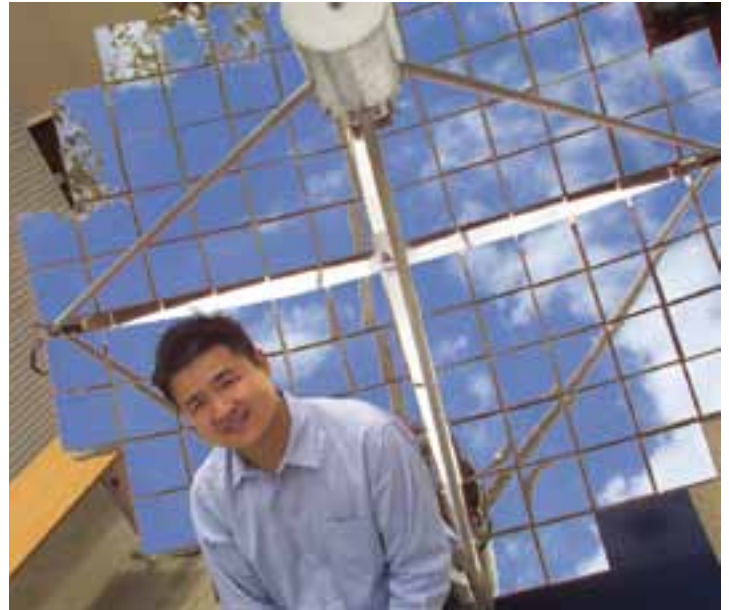
Dr Katherine Dean (2002) fell in love with research during her honours year – now she is a research scientist with Green Materials, at CSIRO Manufacturing and Materials Technology.

Katherine is currently researching biodegradable polymer systems made from wheat, corn and soy.

At Monash, the atmosphere in materials engineering was “very friendly and inspiring,” Katherine says.

One of the highlights of her time in the department was studying for four months in Lyon, France, as part of her PhD. In her undergraduate studies, Katherine did a double-degree of Materials Science.

“Studying materials engineering has enabled me to work in a field where I can undertake great science whilst working towards development of environmentally sound materials and technologies,” Katherine says.



Kenneth Cheah

“The culture was the most enjoyable part of my time in the department. It was a close-knit community with very much an open-door policy. The lecturers were easily accessible and always willing to discuss their research interests and answer questions.”

Ken Cheah (1999) is project leader of materials R&D at Solar Systems Pty Ltd, which designs and builds ultra-high-efficiency concentrated solar-power stations.

“My work includes a range of projects on solar reflectors, photovoltaic cells, new materials development, optics and corrosion monitoring.

“It involves identifying new technologies and research partners, managing relationships to achieve the best outcome for the company, and problem solving materials-related issues,” Ken says.

The materials engineering course at Monash allowed Ken to combine practical engineering and applied science.

The highlights, he says, were the projects and electives.

“Both allowed you to pursue your own areas of interests and creative problem solving.

“Often actual current research issues were discussed during the teaching and you were given opportunities to help solve the problem.

“The department itself was something of a revelation,” Ken says.

“It was surprisingly not as rigidly structured as some of the traditional engineering courses.

“Due to the small groups, it allowed for extensive discussion and debate of different ideas,” he says.

Juri Jeske

“The course at Monash was as I expected, challenging, and diverse enough to allow an informed choice for later specialisation.”

During his last year of study, Juri Jeske (2003) specialized in gel-casting of ceramics, then changed to plastics at ICO Courtenay Polymers, working as Technical Manager for Australia. “I am responsible for overseeing R&D activities

and projects for Australia, developing and implementing polyethylene and engineering polymers for rotational moulding, and developing quality-control processes for the manufacturing plants in Melbourne and Brisbane,” Juri says.



Dr Marcus Zipper

“By acting as a bridge between the R&D at CSIRO and our key external stakeholders and customers, I can have an impact that will provide benefit to Australia and Australian industry.”

Dr Marcus Zipper (1995) believes his job as Strategic Business Development and Marketing Manager at CSIRO Minerals offers the best of both worlds: a commercial role in an organisation that focuses on R&D and science.

It is a role that allows him to use both his science/engineering background and his commercial and business expertise. “This, in many ways, was an extension of the skills

and capabilities I had developed during my BSc/BE and PhD, and allowed me to continue in an active role in the materials field,” Marcus says.

He did a combined Materials Science and Materials Engineering double-degree.

“I believe that I am still, and probably always will be, attracted to areas that have a materials-oriented focus,” Marcus says.

Kelly Lawrence

“After graduation I definitely wanted to find a job that would use the knowledge I had obtained while doing my degree. In my last year or so I thought that I would prefer a job within the manufacturing industry.”

Kelly Lawrence (2001). Her first job was at CSIRO, where she worked on the production of nanoparticle additives and their use in polymers, coatings and sunscreens.

Kelly’s current employer, Basell Australia, is a global company that produces not only polypropylene but also polyethylene, advanced polyolefin materials and related products.

“The PP pellets produced by Basell are sold to plastic product manufacturers who process them into products such as film,

fibre, containers, closures, furniture and automotive parts,” Kelly says.

From ‘friendly and personal’ Monash, where she enjoyed the hands-on experience in lab classes, Kelly has moved to an industry where she is often called upon to do urgent quality-control testing.

“I enjoy the variety of work and the chances available to be involved with many different areas of the company, for example production, product development and technical sales,” she says.

Mark Hodge

“Midway through first year I saw materials as the one branch of engineering that would enable me to work in all the other disciplines because of the enabling nature of materials technology.”

Mark Hodge (1994) recently joined the Defence Materials Technology Centre as Foundation CEO.

The Defence Materials Technology Centre brings together expertise in the materials sciences from the Australian Government, industry, and academia to make a significant contribution to improving Australian Defence Force capability across military platforms in the battlespace.

“This role allows me to be involved in world leading materials engineering capabilities to develop, integrate and sustain new materials and manufacturing technologies across existing

and planned defence platforms,” Mark says.

For Mark, materials engineering, is an enabling discipline that supports and governs essentially any other discipline in the physical sciences and engineering realm, including the rapidly developing, high-value sectors of nano, bio and information technologies.

“Materials not only offers the ability to become a technical specialist but also provides a solid grounding in general engineering principles and project management activities that are extremely valuable in technical and non-technical aspects of my career,” he says.

What types of jobs do Materials Engineers and Materials Scientists work in?

Metallurgist, ceramicist, composite engineer, corrosion engineer, adhesives engineer, plastics engineer, rubber scientist, manufacturing engineering, injection moulding technology, research scientist (including at CSIRO and DSTO), consultant, manager, sales and marketing, technical services, quality control, process control engineers, performance and failure analysis, manufacturing industries, patent attorney, project engineers, teachers, business development managers.

What companies in Australia would hire Materials Engineers?

Airbus, Arthur Andersen Consulting, Alcoa, BASF, Basell, BlueScope Steel, BHP Billiton, Boston Consulting, CSIRO, Comalco, Dow, DSTO, EPA, Esso, Exxon Mobil, Ford, Holden, Huntsman Chemical, Kraft, Moldflow, Maunsell, Metlabs, Melbourne Water, Nissan, Orica, Olex Cables, Qenos, Telstra, Smith and Nephew, Toyota, Webforge, FMP Group.

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