



UQ-KU Project

九州大学 研究教育交流拠点

UQ-KU
Project
Newsletter

April 2019

THE UNIVERSITY OF QUEENSLAND – KYUSHU UNIVERSITY OCEANIA PROJECT

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KU Faculty of Economics Delegation Visit to UQ

The Institute of Continuing and TESOL Education (ICTE) and the University of Queensland welcomed a delegation from the Kyushu University's Faculty of Economics in late March.

Professor Kenji Iwata, Dean of the Faculty of Economics, headed the delegation. Professor Johei Oshita, Associate Professor Takeshi Miyazaki and Assistant Professor Meifen Chu accompanied Professor Iwata.

Professor Iwata and his colleagues were at the University of Queensland to finalise the preparations for the visit of by a select group of high achieving Kyushu University economics students. These students will attend an intensive, economics focussed English language programme at ICTE.

The Kyushu University delegation met with Mr Phillip Fredericks, the Deputy Director of ICTE and Ms Renee Winton, the Manager of Business Development at ICTE; as well as Dr Satoshi Tanaka, from the University of Queensland's School of Economics and Mr Alistair Laurenceson, the Manager of International Development from the Faculty of Business, Economics and Law.



ICTE and UQ staff welcome the delegation from Kyushu University's School of Economics. Anticlockwise from the Right: Professor Johei Oshita, Assistant Professor Meifen Chu, Professor and Dean Kenji Iwata, Associate Professor Takeshi Miyazaki, Ms Renee Winton, Mr Jonathan Read, Professor Kazuhiro Nogita and Mr Phillip Fredericks

Professor Kazuhiro Nogita and Mr Jonathan Read, manager and administrator, respectively, of the UQ-KU Oceania Project also had the pleasure of meeting the Kyushu University Economics Faculty delegation and learning about the students that will be coming to ICTE and the University of Queensland.

The University of Queensland - Japan Program for Industry Experience (UQ-JPIE) 2019

The University of Queensland is pleased to announce that 15 engineering undergraduate students will travel to Kyushu University to participate the UQ-JPIE 2019. This programme is supported by the Australian Government's New Colombo Plan and facilitated by the UQ-KU Oceania Project and the Kyushu Economic Forum.

The UQ-JPIE integrates lectures from some of Kyushu University's Engineering world leading experts, with laboratory tours of the Ito Campus and visits to industry.

Lecture topics will include Advanced Engineering Technologies with a focus on the Japanese Manufacturing Sector and Japanese Language. The Kyushu Economic Federation (KEF) will facilitate industry tours involving Toyota (Lexus hybrid factory), Mitsubishi Heavy Industry (Shipbuilding Co., Ltd.), Hitachi Ltd. (Rail System), Nippon Steel & Sumitomo Metal (Yahata works), through their membership of KEF. This programme is a highly regarded part of the UQ due to the practical nature of the work and the exposure to real-world international manufacturing operations. The students that participated in UQ-JPIE in previous years have always enjoyed the programme put together by Professor John Chen his team from the International Education Support Centre and the Kyushu Economic Forum.



University of Queensland undergraduate engineering students attending a UQ-JPIE (New Colombo Plan) pre-departure briefing

UQ Undergraduate Student Interns at Kyushu University

Mr Nelson Partoredjo a University of Queensland mechanical engineering undergraduate student, who participated in the UQ-Japan Program for Industry Experience (UQ-JPIE) last year, just completed an internship at Kyushu University.

Mr Partoredjo worked on hydrogen fuel cells under the supervision of Professor Akari Hayashi and Associate Professor Stephen Lyth. Mr Partoredjo greatly enjoyed his time at Kyushu University and more can be read about his experiences on the following page.

FOR MORE INFORMATION VISIT

<http://www.mechmining.uq.edu.au/uq-ku-project>

HYDROGEN FUEL CELLS FOR OUR CLEAN ENERGY FUTURE

February 26th, 2019

I woke this morning to a cold winter's morning in East Asia, having spent the previous night putting the finishing touches on what I hope will be my first research publication in the field of engineering and science. I put on a beanie, a warm jacket and thick socks in preparation for the short bike-ride to my research lab, and cycled briskly along a road where kilometres of rice fields stretched to my left and right.

It feels like a lifetime ago that, instead of waking to a cold Japanese morning, I woke to a warm hot sunrise back home in Brisbane. I have been very lucky as an Australian student to have so many opportunities to broaden my study and experiences, but my two-month stay whilst working in Japan was an experience like no other.

Eight months ago, whilst on the UQ-KU short term study exchange in the 2018 semester holidays, I was lucky enough to meet Professor Stephen Lyth, who delivered a short lecture series on his work in hydrogen energy. He discussed the rapidly growing fuel-cell technology in Japan and how his research institute, the International Institute for Carbon-Neutral Energy Research (IC²NER), was heavily involved in the integration of renewable energies into modern engineering. I was genuinely excited by the prospect of working in this field of research, so I made sure to stay in contact with Professor Lyth.

Throughout the semester back at UQ following this short exchange, I set about organising a two-month internship working in Professor Lyth's lab. I still vividly remember the day I bought my flights – it was happening, I was going back to Japan.

Today was my last day working in the lab and it is incredible reflecting on how much I have learnt. I worked in the area of catalysis, where my project involved adding various amounts of carbon nanotubes to the catalyst membrane within hydrogen fuel cells. I gained experience in a variety of engineering fabrication processes, as well as material characterisation techniques. I learned how to perform spray pyrolysis, cyclic voltammetry, and platinum decoration, and later gained experience in scanning electron microscopy, Brunauer-Emmett-Teller absorption analysis, and Raman spectroscopy.

But, perhaps more importantly, I learnt what I was like to work in the field of research. Everyday, what was most exciting to me was that what I was doing, no-one had ever done before. The results I was getting from my characterisations, no-one had gotten them before, and no-one knew what they were going to be. Of course, I could hypothesise, but there was something genuinely exciting about the unknown – this was not a course-related practical experiment which university students did year after year – this was something completely new. Neither myself nor my supervisor knew if we would be able to see the nanotubes under the electron microscope, I just had to find out. Neither of us knew what the cyclic voltammogram of my catalyst would look like, I just had to perform half-cell electrochemistry to find out. In Raman spectroscopy, when scanning the first sample I had fabricated, I didn't know whether I would see properties indicative of the presence of nanotubes, I just had to find out.

On a more sentimental level, I gained perhaps even more from the lessons that working on this project taught me. Several times during the pyrolysis of my samples, the nitrogen gas level would drop too low, my sample would combust in the presence of oxygen, and I'd be left with an empty ceramic dish where my precious sample once was. I learnt that patience is key. After developing countless amounts of catalyst samples of different characteristics, which were developed with different pre-cursors and doped with different materials post-pyrolysis, it would have been easy to lose track of everything. I learnt that being organised is a necessity. After an unexpected failure in the rotary evaporator caused a leak of tetrahydrofuran near an electrical component, it was just as well I knew the required safety protocols. I learnt that the importance of safety can never be understated.



Much like these lessons, the people that I met I will hold close to my heart forever. Albert Mufundirwa, Professor Lyth's PhD student who was my supervisor, became much more than that. He became a mentor, a source of inspiration and a friend. We would share stories of our starkly different lives – mine from Brisbane, and his from the heart of southern Africa, in Zimbabwe. I met Maria from Brazil, Sean from Korea, José from Spain, Tanja from Germany, Hadi from Iran – the list could go on.

I have been blessed to have this opportunity. I have learnt so much not just about science and engineering, but about other cultures, other peoples' lives, and about the sort of person I want to be. I have become more inspired, intrigued and motivated to tackle the challenges that modern engineering presents.

