



UQ-KU Project

九州大学 研究教育交流拠点

UQ-KU Project Newsletter

January 2018

THE UNIVERSITY OF QUEENSLAND – KYUSHU UNIVERSITY OCEANIA PROJECT

January Newsletter

Kyushu University Progress 100 Project

This is the second year of the Progress 100 Project headed by Professor Masato Wakayama, Trustee and Vice President of Kyushu University (KU). The mission of the Project is to build upon the research and strengths of KU by inviting top researchers from around the world to KU. The international collaborative research programs and joint publications that will be a direct result of the Progress 100 Project, in addition to undergraduate and post graduate students having direct access to some of the best researchers in the world will greatly enhance the ranking and reputation of Kyushu University.

As part of the Progress 100 Project, Professor Syo Matsumura and Professor Chihaya Adachi hosted three distinguished research academics from the University of Queensland (UQ) between October 2017 and January 2018. Professor Jin Zou is Chair in Nanoscience at UQ; Professor Matthew Dargusch, director of The Centre for Advanced Materials Processing and Manufacture (AMPAM) and Professor Kazuhiro Nogita is researcher in the School of Mechanical and Mining Engineering at UQ.

KU Faculty of Medicine Delegation visit to UQ

As both Kyushu University of the University of Queensland have prestigious Medical Faculties, the prospect of collaboration between these Faculties on research and teaching is highly desirable.

To that end, UQ was delighted to host a delegation from the Administrative Office of Kyushu University's Medical Sciences, Dental Science and Pharmaceutical Sciences Faculty.

Mr Takao Yoshida (Director) headed the



The Kyushu University Medical Faculty Delegation visitors. From left to right: Mr Takao Yoshida; Ms Rina Fuji; Mr Kyohei Hamada and Mr Yuji Ando (KU).

delegation and Mr Yuji Ando (Deputy Head), Ms Rina Fuji (Senior Administrator) and Mr Kyohei Hamada (Administrator) accompanied him.

The KU delegation travelled to Brisbane on the 1st of December 2017 and met with Ms Cecile McGuire, International Manager, UQ Faculty of Medicine, Ms Sarah Piper, Research & Development Officer, School of Biomedical Sciences, and Ms Anne Louise Bulloch, Manager Research and Research Training, Faculty of Medicine.

UQ-KU Project Lecture Series

Kyushu University hosted Professor Jin Zou from 27th Nov to 8th December. During his stay, Prof Zou has delivered a six part lecture series (in English) entitled "Introduction to

Microscopy for Nanomaterials". The lectures, given to undergraduate students, will cover electron microscopy, nanomaterials and thermoelectric materials.

Mr Jonathan Read also visited Kyushu University during October and November of 2017 to deliver the annual lecture series on Engineering Ethics to Kyushu University's international student cohort.

Professor Matthew Dargusch the director of

AMPAM also visited Kyushu University from the 4th to 8th of December.

During his stay, Professor Dargusch delivered a seminar entitled "Centre for Advanced Materials Processing and Manufacturing."

UQ-KU Collaborative Research

Four researchers from the UQ travelled to Fukuoka to work collaboratively with Professor Syo Matsumura, director of The Ultramicroscopy Research Center, Kyushu University and other members of his research group.

Professor Kazuhiro Nogita investigated the kinetics of polymorphic phase transformation in Mg_2NiH_4 and the crystal structure of its low-temperature twinned polymorph.

Ms Flora Somidin used the ultra-high voltage transmission electron microscope UHV-TEM to observe crystallographic changes during in-situ heating/cooling of solder joints.

Ms Shiqian Liu used the UHV-TEM to observe crystallographic changes during in-situ heating/cooling of Ga alloy and solder joints.

Ms Xin Fu Tan was investigating new manufacturing methods for advanced anode materials for lithium ion batteries.

Professor Matsumura and these researchers from UQ had the good fortune of visiting Professor Kosuke Morita at the Faculty of Science, Kyushu University on the 21st of December 2017. Professor Morita is the director of the Research Group for Superheavy Element at the RIKEN Nishina Center for Accelerator-Based Science (RIKEN) and they synthesised the 113th element in the periodic table, Nihonium (Nh).

This is the first element

of the periodic table to be successfully synthesised in Asia.

More information about this discovery via the links below:

<https://www.asianscientist.com/2016/06/top-news/element-113-nihonium-nh-riken-kosuke-morita/>

<https://en.wikipedia.org/wiki/Nihonium>

THE 2nd ELECTRONIC PACKAGING INTERCONNECT TECHNOLOGY SYMPOSIUM 2017

The 2nd Electronic Packaging Interconnect Technology Symposium (EPITS 2017) was held on November 1st and 2nd in Fukuoka.

The symposium was a collaboration among Mechanical and Mining Engineering, University of Queensland (UQ), Australia, Kyushu University (KU), Japan, CEGeoGTech

electronic packaging and interconnect technology.

This event brought various researchers, academics, and industry leaders from six countries to discuss and debate about the state-of-art and future trends in electronic packaging technology.

The symposium program would not be possible without the generous financial and logistics support from the Progress 100 project (Kyushu University), UQ-KU project, The Japan Institute of Electronics Packaging (JIEP), and the Research Center for Three-Dimensional Semiconductors.

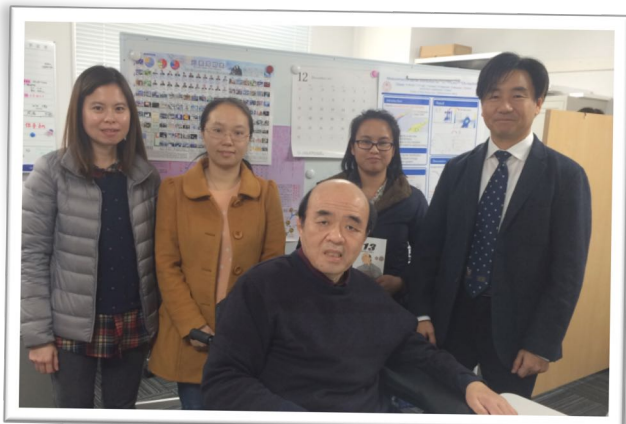
<http://epits15.com/sponsorship/>.



The EPITS2017 attendees at Kyushu University Nishijin Plaza.

Universiti Malaysia Perlis (UniMAP), Malaysia and the Malaysia Japan International Institute of Technology (MJIT) Universiti Technology Malaysia, Malaysia. The symposium was at the Kyushu University Nishijin Plaza facility, Fukuoka.

EPITS2017 aimed to bring together technologists, researchers and professionals from the academic, industrial and public sectors in the context of a multi and interdisciplinary forum and discussion. The symposium also provided an excellent opportunity for intellectual discourse on advances and research results, in the field of



The UQ delegation visits Professor Morita. From left to right: Ms Xin Fu Tan, Ms Shiqian Liu, Professor Kosuke Morita, Ms Flora Somidin and Professor Kazuhiro Nogita.

A TRIP AS SWEET AS TIROLIAN

A conference in Fukuoka and a few cutting-edge transmission electron microscopes (TEMs) had brought us, two Engineering PhD candidates from UQ, to Kyushu.

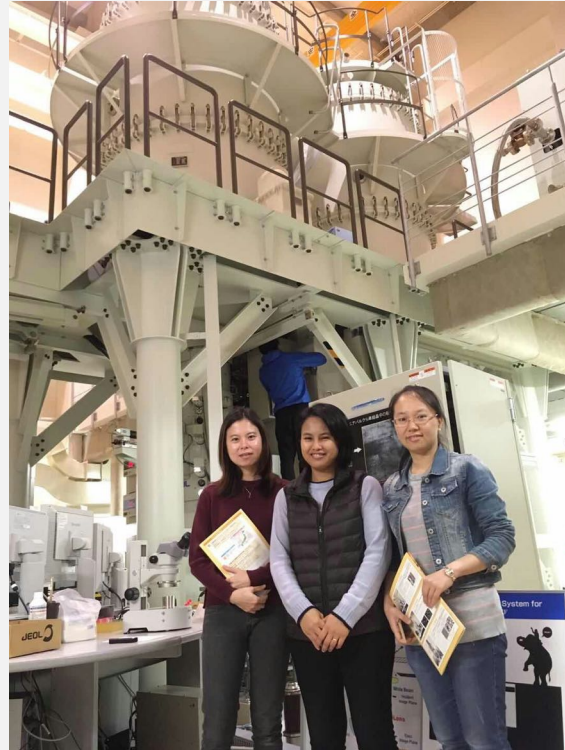
We were part of the organising committee for the Electronic Packaging Interconnect Symposium (EPITS) 2017, an international conference which took place at Nishijin Plaza in Fukuoka. There were an endless list of tasks that we needed to do for the preparation of the conference. These included venue setups, conference website updates, scientific assessments of submitted papers and abstracts, etc. Among them, one of the most memorable tasks was to sample a great assortment of Fukuoka sweets and snacks, traditional and modern, and pick the ones we liked best to serve at the conference. In the end, more than 10 varieties of snacks were chosen, and our favourites were Tirolian, a crispy cylindrical cookie roll stuff with flavoured cream, Chidori Manju that literally translates to Thousand Birds Sweet Bun, and Menbei, a savoury rice cookie containing fish roe, octopus and squids. They were all very popular at the conference.

The conference was followed by almost two months of transmission electron microscopy experiments at Kyushu University. Electron microscopes have much higher resolving power compared to light microscopes. High end TEMs can visualise the atomic arrangements of matters. Kyushu University houses one of less than twenty High Voltage TEMs in the world. The giant, which is located in its own specially designed building, has an accelerating voltage of up to 1300kV. We travelled across the Pacific Ocean to conduct our experiments in KU as our samples are too thick to be studied with the conventional TEMs available in UQ. The Ultramicroscopy Centre in KU has a tremendous amount of accumulated TEM knowledge and know-how, and the staffs and students there were generous to share them with us.

Apart from the work we were doing, we also experienced the rich culture, tried delicious food and travelled to a few other cities in Kyushu. We learned a Fukuoka traditional clapping sequence which is performed after each gathering, that goes "clap, clap, hold... clap, clap, hold... clap clap, clap, hold...". We visited Shinto shrines, Buddhist temples and ancient castles. We celebrated the Karatsu Kunchi Festival which involved dragging giant wooden statues along the streets and the sandy beach, while shouting "Inya! Inya! Inya!" or "Yoisa! Yoisa! Yoisa!" We sampled ramen noodles from more restaurants than fingers on a hand can count. We ate squid sashimi so fresh the tentacles of the squid were still moving. We survived fugu, the poisonous puffer fish, so adored by locals in Shimonoseki they were on their manhole cover. We travelled north to the industrial city of Kitakyushu. West to the fishing village Yobuko with its bustling morning market. East to Dazaifu, the administrative centre of Kyushu in ancient days. South to Kumamoto and Nagasaki, where the aftermath of an earthquake was in plain display with the tumbled Kumamoto Castle turrets, and where the Atomic Bomb Memorial left a sad song humming for hours.

We arrived in Fukuoka when the cosmos flowers were in full bloom, when the colours of the leaves were just beginning to change. By the time we were leaving, the trees were mostly barren and snow had already paid a visit or two. The trip has been a special experience for us, and we will remember the warm hospitality and the friendships made during these two months.

Shiqian Liu and Xin Fu Tan (UQ PhD candidates)



MY GREAT EXPERIENCE WITH UQ

I came to Kyushu University in the year of 2016 and started my Ph.D. course in Prof. Syo Matsumura's Group. Prof. Matsumura is a very responsible supervisor and the group members are also very friendly to me. As a beginner for Microscope, Prof. Matsumura gave us the lectures of Physical Principles of Electron Microscopy which is quite a nice book for understanding the principle of the Microscope. Here, I experienced totally different learning atmosphere. My research topic is about the Pb-free solder alloy. As supported by the UQ-KU project, the samples were prepared by Prof.

Kazuhiro Nogita's group at University of Queensland. Prof. Nogita is also concerned about my research work and gives me lots of suggestions. I do experiments in the Ultramicroscopy Research Centre (URC) at Kyushu University. The URC is equipped with several advanced facilities, such as Cs-corrected scanning transmission electron microscopes and a high voltage transmission electron microscope with a voltage of 1250kV. The academic staff and technicians here are very kind and patient. I also benefit from their guidance.

Every year, lots of researchers come to URC to do experiments. I made friends with each other and especially students from the UQ. Because of the similar research, it's a great chance for us to communicate with each other. Last October, Flora, Shiqian and Xinfu from UQ came here and we soon became good friends. During that three months, we often chatted with each other about experiments, and also went traveling around Fukuoka city at weekends. It is an unforgettable memory for me. On 1st - 2^{ed} November 2017, I took part in the Electronic Packaging Interconnect Technology Symposium (EPITS 2017) in Fukuoka which was held by the Prof. Nogita and his colleagues. During the symposium, I was amazed by the research works from the keynote speakers. I also had a chance to taste the traditional Fukuoka sweets during the coffee breaks.

Fortunately, I got the best poster award in the symposium. That is a big surprise for me. Of course, the research results were also attributed to the help from Prof. Matsumura, Prof. Nogita and Mr. Yamamoto. The life in Fukuoka is happy and fulfilled, I can feel my progress every day. The culture is different from Australia and the foods are delicious. It is a new experience for me. The UQ students, welcome to Fukuoka, and I am waiting for you at Kyushu University



Wenhui Yang (KU PhD candidate)

FOR MORE INFORMATION VISIT

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