

## 2017 International Workshop in Australia on “Materials for Future”

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### 1. Introduction

In the last few decades Aerospace industry, automobile industries and many other sectors are seeing a drastic transition of focus from traditional structures to building more advanced multifunctional materials. Multifunctional materials are the need of the hour. Melbourne University, RMIT University and MCN center of Melbourne are also doing pioneer research in material development, with future applications in mind. New class of these materials will have vast applications in various fields ranging across battery/capacitor, sensors, actuators, EMI shielding, optics, anti-static and thunder lightning protection and many more. In this workshop, we visited Melbourne to see and experience their advance research facilities and had some fruitful discussions with the students and professionals there. This workshop also aimed to broaden the research network for graduate students while giving them on-hand experience to see the manufacturing of some of the future materials in making.

### 2. Outline of Workshop

1. Melbourne University (Hall Mark research initiative) on 22nd August 10 AM – 1 PM.
2. Melbourne University (Bio-Mechanical department) on 22nd August 4 PM – 5 PM.
3. MCN center on 23rd August 10 AM – 4 PM.
4. CSIRO (Materials Science and Engineering) on 23rd August 4 PM – 5:30 PM.
5. Cultural Experience Day on 24th August (couple of places in Melbourne)
6. RMIT University (School of Engineering) on 25th August 10 AM – 12 PM.
7. RMIT University (Aerospace Engineering and Aviation) on 25th August 1 PM – 3 PM.



Fig 1 Group Photo at Melbourne University



Fig 2 Presentation at Melbourne University



Fig 4 Lab tour at Melbourne University



Fig 3 Group Photo at MCN



Fig 5 Presentation at MCN



Fig 6 Tour at RMIT

### 3. Workshop Outcome

On the first official day (22<sup>nd</sup> August) of the workshop, we visited Melbourne University (Hall Mark research initiative) in the morning, where we were welcomed by the Dr. Rackel and his team. We had a presentation session from both sides followed by the lab visits. Professors and PhD Students from the labs introduced us with their projects and various machines. Second half of the day was assigned to a lab visit to Bio-Mechanical department in the Melbourne University. Two postdoc and one PhD Students showed us their lab and showed how they are combining Biology with the Mechanical engineering. I was surprised to see that they are working on real bones to find bones fracture behavior.

On the second day (23<sup>rd</sup> August) of the workshop, the main event was at the MCN center, however due to some delay in Bus arrival we reached the facility 15 minutes late. However, I was surely surprised with the attendance of the researchers there for our workshop. I think there were at least 25-30 people present there. From 10 AM- 4PM, we had very intensive research presentation session separated by coffee/lunch break after every 1 hour. In MCN, I met some students from RMIT University (School of Engineering) and researchers from CSIRO (Materials Science and Engineering), who invited us to visit their labs and facilities. I decided to include them. That's how we end up with more technical visits. We visited CSIRO on the same day with students in their cars.

On the third day (24<sup>th</sup> August) of the workshop, it was the most necessary break for the students after intensive technical session to relax and to enjoy the soul of the Melbourne City. We walked a lot and covered almost all planned places. I think, the visit to the Old Melbourne Gaol was the cherry on the cake. All participants enjoyed it, including me.

On the fourth day (25<sup>th</sup> August) of the workshop, we visited RMIT University and went to see Prof. Fard from School of Engineering, who happened to be alumni of Tohoku University and was fluent in Japanese language. He showed his lab with his students and our Japanese students could ask questions in Japanese. The second half of the day was dedicated to the Aerospace Engineering and Aviation department. However, I felt a little less participation from their side. I think only 5-6 students were present during the whole presentation session and no presentation from their side. We visited one lab with Prof. Akbar, but couldn't go to the second building as there was a fire drill going on. Finally, I found Australian people very kind and loved their hospitality. We could do something we didn't plan and couldn't do something we planned. Therefore in the end, it was a win-win situation.