

## IDC/CDT Outreach Report

October 2016



## **Introduction**

The 2015/16 Report captures the activities of the IDC/CDT Students over the last year. This document not only disseminates information but also acts as an incentive for the next cohort of students.

A highlight of this Year's Report is two Students being part of the Team that reached the Final of the Engineering YES Competition.

Students have also continued their engagement in School visits, mentoring students, supporting University Open Days, promoting Women in Engineering and working with local IChemE groups.

**RWG October 2016**

The EngDs have taken part in a variety of Events across the UK.

The following reports give the details of these Events and some of their future plans:

Toni Bianca Di-Paolo

Cyrus Espinosa

Zoe George

Andrew Gray

Jodie Hodgkins

Davidson Lutkenhaus

Dmytro Stratiychuk-Dear

## Toni Bianca Di-Paolo

### Chemistry at Work: 4th February 2016, Thinktank Museum, Birmingham.

This event was funded by the Royal Society of Chemistry and focused on how chemistry is used in various careers. The day involved a “show” in the morning followed by various workshops within the Thinktank Museum, Birmingham. My role for the day was to guide a school to their workshops throughout the day and assist with the workshops if required. I was also involved in answering any questions the student may have regarding science and careers within science.

### Engineering YES: Heat – 24-27th April 2016, Holiday Inn, Filton, Bristol.

#### Final – 15th June 2016, Innovation Campus, Birmingham,

This event was an entrepreneurial training and networking event lasting 3 days, helping us to create a fictional tech start-up company, with consideration of strategic and financial growth over a 10 year period. The intensive training finished with us pitching the idea in a presentation to venture capitalists in an aim to secure funding for the business. As a team we won the best elevator pitch prize and best teamwork prize in the heat, as well as being one of two teams progressing to the final for our business plan relating to ‘UV degradable microcapsule technology for sunscreen’. We refined the presentation and then repeated it at the final but unfortunately didn’t manage to win (highly contentious decision!).

The purpose of the event was to introduce us to what it takes to create a start-up firm and what we would need to do in order to maximise the chance of success. The idea was to convince people that doctoral students have skills outside their technical area that can be useful attributes for applying ourselves post-EngD. The benefits were that each of us felt much more knowledgeable about various different aspects of creating a business such as day to day finances, IP, corporate strategy and also the importance of presentation style in order to obtain investment.

In total, there were 6 postgraduate University teams in the heat stage (2 progressing from each heat), and 6 teams in the final with around a dozen mentors and judges in each from various rotary clubs and large companies such as RBS and Rolls Royce.

### At the Heats:



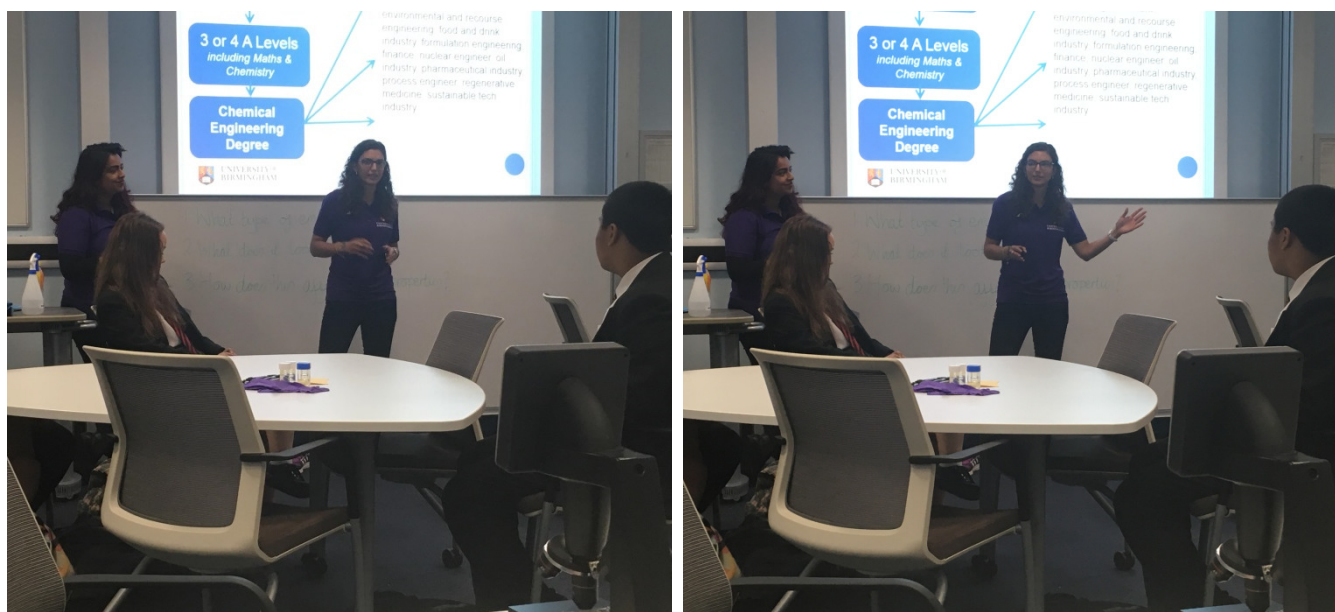


### At the Final with our Supervisor:



### Discovery Day: 22nd June 2016, University of Birmingham.

The aim of Discovery Day was for a number of schools to attend various workshops, relating to STEM, across the university, to learn more about the topic and the kind of research done at the university. For this STEM event, I conducted a workshop based around emulsions along with a fellow EngD student. The workshop ran twice during the day with 15-30 students each time. The workshop consisted of a brief background on emulsions followed by some interactive elements involving microscopy and the model tribology head. The workshop was the first one that I have conducted and received positive feedback. I thoroughly enjoyed it and it has given me confidence to want to do more in the future if I can.



### **Access to Birmingham (A2B) Scheme: 30th June- 30th July 2016, University of Birmingham.**

During the summer, I was involved in mentoring a small number of students who had applied to the university to study engineering and were eligible for a scholarship via the Access to Birmingham (A2B) scheme. In order to obtain the scholarship, the students were required to write an assignment about their intended subject area, for example chemical engineering, and the advances being made in a certain industry (medicine, energy etc.). For this role, I was assigned thirteen students to mentor throughout the process. This involved assisting them with their essay, as well as organising an induction session for the total number of students (around 35) with three other tutors. In addition, as a mentor, I maintained regular contact online with the students answering any questions they may have regarding the essay as well as providing useful resource material. The role also involved marking a draft assignment from each student and providing feedback to them as well as marking and grading their final assignments. The overall aim was to make the students reflect on the advances that have occurred due to engineering and to get them used to writing an assignment which is of university standard.

### **Open Day: June, September, October, University of Birmingham.**

I was involved in greeting the students and their families on arrival as well as answering any questions related to chemical engineering as a degree or to university life as a whole. I was also involved in conducting two tours of the department throughout the day, each of which was given to around 40 people. Each open day welcomed around 200 students in total and the aim was to promote chemical engineering and the university.

### **Girls in STEM Day: 14th September 2016, University of Birmingham**

This was a STEM event and the purpose was to promote women in engineering. Year 9 girls from various schools in the surrounding area attended the day which involved an introductory talk followed by two hour-long interactive workshops in different STEM subjects. Throughout the day, I was involved in guiding a certain school to their workshops, assisting the students and getting involved in the workshop. I also led a campus tour for a group of approximately 30 students and answered any questions regarding STEM.



**Future Plans.**

In the coming year, my aim is to further develop the emulsion workshop and visit schools with it. Additionally, I will continue with the outreach and public engagement work carried out so far, including open days, AVDs and mentoring for the A2B scheme.

# Outreach/ Public Engagement Activities 2016 – Cyrus Espinoza

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## **AVD/ Open Days**

- Helped out to promote the department during applicant visit and open days multiple times
  - Provides tour of the department
  - Answering relevant questions from students and parents

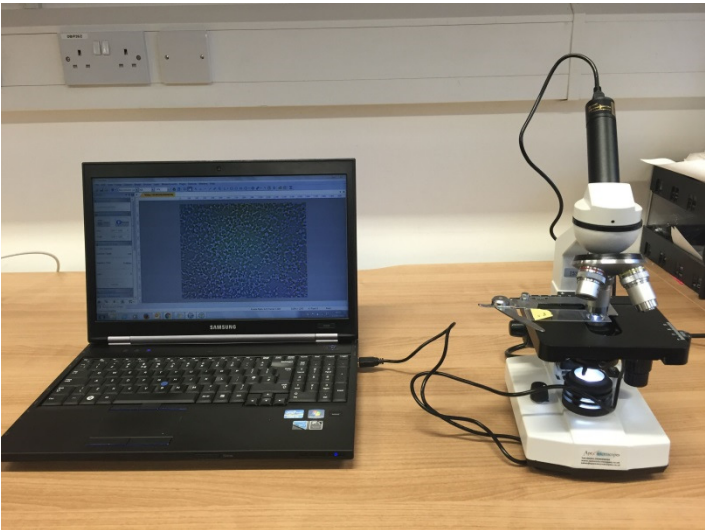
## **STEM Ambassador**

- Helped out at Chemistry at Work held in the Thinktank museum at the millennium point on Thursday 4<sup>th</sup> February 2016
  - Took groups of students to workshops and also helped out in some workshops



## Zoe George

<b>Name of Event</b>	<b>Chemical Engineering Open days</b>
<b>Description of Event</b>	Giving an interactive session to A level students interested in pursuing a career in chemical engineering
<b>Date</b>	17 <sup>th</sup> October 2015
<b>Responsibilities</b>	Interacting with students who potentially would take on the undergraduate course and providing them information about the course and any questions they have related to it. I gave a talk on emulsion science in the labs and product applications. I also spoke about some of the research carried out within the microstructure group and the relevance to chemical engineering.
<b>Location</b>	Chemical Engineering, University of Birmingham
<b>Audience</b>	A level students and guests of students
<b>Purpose and benefits</b>	The AVD days provided the students with a taster into the chemical engineering course and some labs which related to the course. The day allowed me to connect with undergraduate students and give them an insight into what they can expect on the course.

<b>Name of Event</b>	<b>Engineering and Physical Sciences (EPS) Discovery day</b>
<b>Description of Event</b>	GCSE and A level Students were brought into the University to have an insight into the research that STEM carries out. Two workshops titled Exploring Emulsions were carried out by Chemical Engineering.
<b>Date</b>	22 <sup>rd</sup> February 2016
<b>Responsibilities</b>	I led and organised a workshop based on the processing and application of Emulsions
<b>Session</b>	<p>A Chemical Engineering workshop based on Emulsions-led by myself and another EngD student Toni-Bianca Di Paolo for 90 minutes. The workshop involved an interactive session where students got to analyse emulsion properties using different equipment which included a tribometer and microscope (Please see setup below). They then could relate the properties of emulsions to everyday products they use.</p>  <p><i>Figure 1. Microscope and attached camera setup linking to laptop to show emulsion structure, Image on the laptop shown is skin cream</i></p>



**Figure 2.**Photo of myself and Toni introducing *Chemical Engineering opportunities and the research carried out in the department*

<b>Location</b>	Chemical Engineering, University of Birmingham
<b>Audience</b>	GCSE and A level students
<b>Purpose and benefits</b>	Engaging students to learn more about the research carried out in the chemical engineering department through current EngD students. The workshop also related their understanding of the topic covered in some parts of the GCSE syllabus to understanding how a new product is developed. The workshop was aimed to provide them with an understanding of various STEM applications and careers they could go into.

## Andrew Gray

### Big Bang fair

18-03-16 NEC

I volunteered in the 'meet the future you' section for the day where I would be involved in workshops with the children to understand what it's like to have the type of career that I do, and also to help them understand how their interests and advise on possible career areas. Throughout the day I took part in 6 workshops and each contained around 30 children.

### Chemistry at work

Feb 2016, Birmingham Thinktank

Spent the day showing school children around the various exhibitions and workshops on offer and answering any questions about the topics that they had (but didn't want to ask the presenters!)  
Class of around 20 school children

### Engineering YES competition

Type of event: Entrepreneurial training and networking lasting 3 days, helping us to create a fictional tech start-up company, thinking of strategic and financial growth over a 10 year period. The intensive training finished with us pitching the idea in a presentation to venture capitalists in an aim to secure funding for the business. As a team we won the best elevator pitch prize and best teamwork prize in the heat, as well as being one of two teams progressing to the final for our business plan relating to 'UV degradable microcapsule technology for sunscreen'. We refined the presentation and then repeated it at the final but unfortunately didn't manage to win (highly contentious decision!).

Date and location: Heat – Holiday inn, Filton, Bristol, 24-27<sup>th</sup> April 2016  
Final - Innovation campus, Birmingham, 15<sup>th</sup> June 2016

Purpose and benefits of event: To introduce us to what it takes to create a start-up firm and what we would need to do in order to make maximise the chance of success. The idea was to convince people that doctoral students have skills outside their technical area that can be useful attributes for applying ourselves post-EngD. The benefits were that each of us felt much more knowledgeable about various different aspects of creating a business such as day to day finances, IP, corporate strategy and also the importance of presentation style in order to obtain investment.

Audience and approximate numbers: 6 postgraduate University teams in the heat stage (2 progressing from each heat), 6 teams in the final with around a dozen mentors and judges in each from various rotary clubs and large companies such as RBS and Rolls Royce.





**Jodie Hodgkins**

## **AMBASSADOR ACTIVITY FORM**

AMBASSADOR NAME: Jodie Hodgkins

SCHOOL: Shrewsbury Sixth form College

SCHOOL CONTACT/ ACTIVITY ORGANISER:

**Richard Bonella**

NUMBER OF STUDENTS: 40?

AGE GROUP/ KEY STAGE: year 9 and year 10

DATE OF ACTIVITY/ DURATION: 29<sup>th</sup> June 9:30am-12:30pm

### **BRIEF DESCRIPTION OF ACTIVITY/EVENT:**

**Science: it's a people thing, A discussion workshop for girls**

This workshop inspired girls who are interested in exploring more about jobs in science, technology, engineering and mathematics – particularly in areas where they are underrepresented.

The session brought the subjects to life by making connections with issues that girls care about and demonstrating that choosing science (particularly physics) and mathematics keeps their options open for entry into a range of interesting jobs and careers.

After briefly introducing ourselves to the girls, we each joined a group of them on separate tables to first discuss facts, myths and challenging comments that can be made about girls/women in STEM. The girls were also given the opportunity to interview us about our jobs/positions, including questions about how we came to be doing that particular role. We rotated around the groups every 10-20 minutes to ensure that everyone got the chance to speak to each visitor. The girls then fed back to the rest of the groups at the end, which indicated that they had gained a lot from the session, as they had learnt more about the wide variety of roles that are available to girls/women in STEM and were now more aware of the different routes that can be taken in their career paths.

## Davidson Lutkenhaus

**Research Engineer:** Davidson Lutkenhaus

**Sponsoring company:** Procter & Gamble

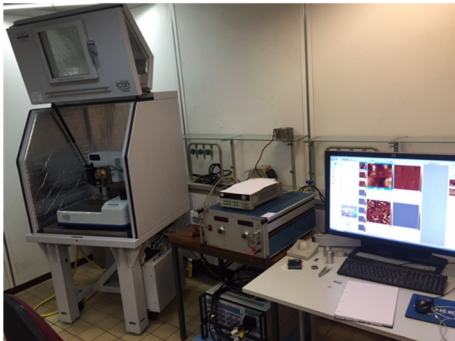
<b>Event / Activity:</b> International Tribology Conference (International Conference)
<b>Date:</b> 16 <sup>th</sup> to 20 <sup>th</sup> September 2015
<b>Location:</b> Tokyo University of Science, Tokyo, Japan
<b>Purpose and benefits:</b> Oral presentation to show my research to experts in the field. Disseminate scientific knowledge and build-up of network and collaborations for EngD. Invited for paper publication what helps to create awareness of the EngD programme.
<b>Audience:</b> Oral presentation to 300 people auditorium / Event had over 1000 attendees
<b>Extra:</b> <div><p>International Tribology Conference</p><p><b>International Tribology Conference, Tokyo 2015</b></p><p>16th-20th September, 2015 Tokyo University of Science, Tokyo, Japan</p></div>

<b>Event / Activity:</b> Chemistry & Materials Symposium (Company's event)
<b>Date:</b> 14 <sup>th</sup> to 16 <sup>th</sup> October 2015
<b>Location:</b> Great Wolf Lodge Conference Center, Mason, Ohio, United States
<b>Purpose and benefits:</b> Oral presentation to show my research to experts and researchers from the company's headquarters. Establishment of network and collaborations.
<b>Audience:</b> Oral presentation to 50 people. Event had over 400 attendees
<b>Extra:</b> <div><p><b>REGISTER NOW!</b></p><p><i>Chemistry &amp; Materials CoPs Joint Symposium</i></p><p><i>"Accelerating Innovation at the Interface of Chemistry and Materials"</i></p></div>

<b>Event / Activity:</b> 1st CDT Conference in Formulation Engineering (Local Conference)
<b>Date:</b> 5 <sup>th</sup> to 6 <sup>th</sup> April 2016
<b>Location:</b> University of Birmingham, United Kingdom
<b>Purpose and benefits:</b> Long oral presentation on the EngD research progress.
<b>Audience:</b> Unknown
<b>Extra:</b> n/a

<b>Event / Activity:</b> IMEC Technology Forum 2016 (Exhibitions/Trade Fairs/Technical Forum)
<b>Date:</b> 24 <sup>th</sup> and 25 <sup>th</sup> May 2016
<b>Location:</b> Brussels Meeting Centre, Brussels, Belgium
<b>Purpose and benefits:</b> Technical sessions, equipment discussion and acquisition, collaborations.
<b>Audience:</b> Over 1000 attendees
<b>Extra:</b> 

<b>Event / Activity:</b> IMEC (Visit to external company)
<b>Date:</b> 2 <sup>nd</sup> June 2016
<b>Location:</b> Leuven, Belgium
<b>Purpose and benefits:</b> Visit their labs and research facilities to build collaboration for the EngD project and establish a link with another industrial partner.
<b>Audience:</b> n/a
<b>Extra:</b> n/a

<b>Event / Activity:</b> School visit - Université Catholique de Louvain (UCL)
<b>Date:</b> 18 <sup>th</sup> to 20 <sup>th</sup> July 2016
<b>Location:</b> Louvain-la-Neuve, Belgium
<b>Purpose and benefits:</b> Visit their labs and research facilities to build collaboration for the EngD project. Connection to share research facilities and therefore improve the quality of the research.
<b>Audience:</b> n/a
<b>Extra:</b> AFM – Equipment being used under collaboration that was established during the visit. 

## **Dmytro Stratiychuk-Dear**

**Name:** Dmytro Stratiychuk-Dear

**Sponsoring company:** DuPont Teijin Films U.K. Ltd. (DTF), Redcar, TS10 4RF

**Date started EngD program:** 09/09/13

**Activity:** Early Careers Panel Chair + Email Campaign Manager/Publicity Officer

**Date:** 09 June 2014 onwards

**Organisation:** IChemE (Teesside Regional Group)

In order to promote the Engineering Doctorate and Chemical Engineering I have been involved in several activities; majority of which were as a member of the Teesside Regional Group for The Institution of Chemical Engineers (IChemE).

My involvement in the group started at the beginning of my Engineering Doctorate with attendance to some of the technical talks which the group organise. In June 2014 I took on the role of the Early Careers Panel (ECP) chair. This involves organising social events for the regional group's members which are in the early stages of their careers. The role also encompasses helping other members to organise technical events throughout the year which allow our members to continuously develop their skills.

In February 2015 I became an Email Campaign Manager (ECM) for the group in addition to my ECP role. As part of this role I am responsible for the email communications with the group members, making sure that the members are aware of the upcoming events. In June 2016 the role expanded to Publicity Officer, with me becoming responsible for Emails, LinkedIn, Twitter communications and the regional group's website with the aim of making the communications with our members more coherent.

In March 2016, I was involved in judging MEng presentations for the department of Chemical Engineering at Teesside University as part of Teesside regional group who award a prize for the best presentation. Outside the IChemE, I spoke to perspective EngD student when they were being interviewed at DuPont Teijin Films in order to give an insight into my experiences on the EngD as well as to discuss why I chose to participate in the scheme and what I see as its benefits undertaking.