

## eParm transcript

Title: Charley Wu, ePARM

Duration: 5.34 mins

### Speaker Names:

S1 Voiceover

S2 Dr Chuan-Yu (Charley) Wu, EPSRC Advanced Fellow, Senior Lecturer, School of Chemical Engineering

S3 Dr Guanyu Yi, Software Developer of ePARM

S4 Chunlei (Marvin) Pei, Software Developer of ePARM

S5 Male student

S6 Female student

S7 Female student

S8 Female student

### Transcript start

S1 Dr Charley Wu is Senior Lecturer at the University of Birmingham's School of Chemical Engineering. The school is one of the UK's top five learning establishments. In recent years Dr Wu has been busy working on the development of advanced discrete elements methods, also known as D.E.M. D.E.M. is a computational method for simulating the motion of particle systems. It shows how those particles behave during powder processing and handling in a range of industries, from pharmaceutical to agriculture and food production to mining. ePARM is the name of the software package which will hopefully provide those in education with an accessible tool to help understand the forces and motion of particle systems. It involves complicated numerical calculations.

S2 The purpose of this project is trying to take the knowledge of our EPSRC funded project to a wide community. Especially for this project we targeted two communities: one is industrial scientists and the other one is future engineers and scientists, basically we're talking about the undergraduates or the postgraduates.

S1 Securing the right people to work on ePARM was the first step.

S2 The first challenge for this project is we tried to employ a software developer so we can develop this easy-to-use, user-friendly graphic user interface. We are so fortunate that, Dr Yi joined us and made this significant progress. Also we have Marvin, he's a PhD student working on the development of Discrete Element Modelling. He has been setting up some case studies using our D.E.M. code. We can make sure our D.E.M. model can talk with the user interface developed by Dr Yi.

S3 Because this is a very professional simulation model I think for people with simulation experience it's easy to understand, but for undergraduate or postgraduate who is taking a taught course, I think they don't have experience of simulation or modelling so for them to use such a programme to grab the simulation concept, this will be a very friendly interface for them to use.

S4 It's kind of a cooperation with my colleague. I need to make sure we have a good agreement with the case [studies], how he will build it and how I implement this into the code.

S1 Charley's next move was to introduce the module concerning Discrete Element Modelling to some undergraduates and Master students in a lecture environment.

S2 Good morning everyone. So this lecture is about Discrete Element Methods. First I will demonstrate how we can use this method for some applications.

S1 What were the students' first impressions?

S5 It enabled me to see and to understand the process clearer because it simulates how the particles inside the system actually move about. A picture actually means a thousand words.

S6 Before coming into the lecture I didn't know what D.E.M. was but yeah, I think it helps visualising how the powders work so it's better in research terms.

S7 When you are doing the stuff manually you have to make some assumptions and calculate over again but with this I think you can see it.

S5 So right now what Dr Wu is doing is actually quite helpful to us as undergraduates.

S1 Over the next few weeks the team fine tune the software before the real acid test, letting two undergraduates get their hands on it.

S8 How can I change that?

S2 You can finish this one.

S5 It's actually quite a fun simulation because, for example, back in the lectures it's a bit dry so we can't really see how the particles actually move.

S8 We can't imagine when we study but when we are doing this then we can like 'oh, OK, the particle size actually change and what is the ratio between the particle size and orifice and how does it flow?' it is really like makes the study more alive and more practical.

S2 If it's successful I will try to expand to the user community worldwide; to try and talk to other universities and show them what we've got. I'm going to attend two conferences this year to disseminate this tool even further.

S5 So by actually experiencing it and playing around with it, it will help me to understand better and it will leave a more lasting impression.

### End of recording

