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Bubbles on surfaces: diffusive growth and electrolysis

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More information & location

Could you tell us a little more about your dissertation?

My dissertation will cover different scenarios in which bubbles nucleate, grow and detach. The goal is to gain the fundamental knowledge about the different ways in which bubbles are generated and respond to the surrounding conditions. We move from analytical analysis about bubble behaviour to real life applications which we can use to control bubbles in different ways, such as the fabrication of micropillars to focus the nucleation of bubbles in specific areas and the use of ultrasound as a means of achieving bubble removal from surfaces.

What, to you, is the most important result from your research, or the most surprising one, or the one you're most proud of?

The results from the thesis can be approached in a very constructive way to be used as the first milestone to achieve novel methods to release gas bubbles from surfaces during chemical reactions. The way in which the thesis is built clearly shows an evolution from the most pure fundamental study to real engineering applications. I am very satisfied with our experimental results, since I believe we are closer to achieve real improvement for

applications dwelling with bubbles in the short term. What I am most proud of is that scientists from other universities and groups are starting to approach me to consult me about bubbles. I guess I have gained some experience, haha.

How do you look back on your time as a MCEC PhD?

It is crazy to think that four years have gone by. I knew almost nothing about bubbles when I entered the group, but PoF and MCEC gave me the opportunity to interact with people who have helped me to be the scientist I am now. And I really discovered a passion which I didn't know I had: research and teaching.

Have you gotten used to the wind yet (see this interview from early 2016)?

That is a great question. I wouldn't say I got used to it, but I can handle it much better, haha. Still, rain and wind, killing combination. I have gained much more confidence since I am here in the Netherlands, both in my academic career as well as in my personal life. I guess the Dutch people have taught me to be a bit more direct, and that is very useful when you also want to `sell' your experimental results.

In the same interview, you say would "like to stay in the academic world, if possible doing some analysis in aerodynamics (which is another application of fluid mechanics)". What is your next step?

My next step will be a postdoc at MIT in Boston. I am going to the group of Kripa Varanasi. We are going to keep working on bubbles in electrolysis and chemical reactions. And I am starting a second project in the same group: drag reduction in aerodynamic profiles. My dream come true: aerodynamics plus bubbles.