

Nicole Aegerter



What do you find fascinating/challenging about energy research and the energy transition?

Energy is a very hot topic today and there is so much to be done! On the one hand, I see many opportunities in solar, wind, hydroelectric and nuclear power to develop more efficient production and transport processes. On the other hand, there is also a lot of potential in the conversion of energy and the associated energy consumption, such as in mobility. Finally, recycling is also a major issue, which also requires a fundamental understanding of many environmental processes. Especially in the development of new and more sustainable materials, there is still a lot of technical potential for me as a materials engineer. Besides this, there are also many social and political challenges in the field of energy research, which makes the whole topic very fascinating.

What are your research topics and what is your role within the SCCER Mobility?

Within the scope of my doctorate, my research concentrates on the production of more sustainable lightweight materials for the mass production of structural components. The general idea is to reduce overall energy consumption by reducing the vehicle's weight. Fiber-reinforced plastics, which are lighter than standard materials like aluminum or steel, have the disadvantage that they are not suitable for mass production due to long processing times and high costs. As part of SCCER Mobility, we have developed a process with which we can cost-effectively produce a fiber-reinforced plastic that can be shaped in very short cycle times and still exhibits freedom in forming complex parts. Initially, the focus was mainly on process development and proof of concept, where today we are more concerned with material optimization and process scaling.

Why did you become a scientist?

I think it was one of my childhood dreams to become a scientist one day. For me it was fascinating to learn how things around me work. Using this knowledge to solve complex problems is what makes science so appealing.

What are your main career highlights?

So far, probably the decision to pursue a doctorate in the field of energy research and the benefits that come with this in terms of personal development, gaining interdisciplinary knowledge and of course the fact that energy research is a very global issue. I hope there are many more highlights to come.

How do you think mobility will change in the next 10 years and what role will renewable energy play?

Thanks to new technologies, we can go almost anywhere in a very short time. This allows us to connect with people around the world, creating new opportunities, especially for business purposes. With comparatively little money, we can travel anywhere and almost as much as we want. With the emerging debates about climate change, we constantly make decisions to put our personal demands behind global and community needs, which is somewhat contrary to human behavior. Nevertheless, I hope that over the next 10 years we will learn to use our resources more consciously. We will not find the "one fits all solution", but I assume that we can change our mobility behavior with a balanced mix of social, technical and political measures. Renewable energies will certainly have a role to play and must have a role, simply because of the waste of oil, air pollution and so on. In the end, we need to understand which technology can be used where it makes the most sense and be aware in advance of how we can close the life cycle of products.

What is your "work-life-balance" recipe?

I belong to the lucky people that enjoy going to work every day. This certainly helps finding a good work-life balance because I am not primarily working for the salary. Nevertheless, I enjoy my free time very much by exploring Switzerland in all its glory by hiking, cycling, running in summer and ski touring in winter. Being in the mountains helps me to get the necessary distance to my workplace and to find inspiration for further development of my research.

Can you provide recommendations for young scientists wishing to pursue a career in the field of (energy) research?

Personally, I believe that with passion and motivation there is nothing you cannot achieve in life. In the end, it will need some endurance and confidence to get through the difficult times but it is worth it. There is certainly nothing better than being able to directly develop concepts and solutions for global issues. Also, unlike

often believed, research includes a lot of teamwork as a lot of our problems cannot be solved with simple ideas but it often needs scientists and engineers from different fields to develop the best solution.

Text and picture: Nicole Aegerter, November 2019