I'm really enthusiastic about imitating nature in separation processes

Prof.dr.ir. Maaike Kroon
Professor of Separation Technology

“I’m really enthusiastic about imitating nature in separation processes”

As a young girl, Maaike Kroon (1980) found school boring and she wanted to be an astronaut – but with the guarantee that she would return safely to Earth after her mission. She finally decided to study Chemical Engineering at Delft University of Technology. She earned her PhD when she was 25. With her appointment at TU/e at the age of 29, Maaike Kroon became the youngest female professor in the Netherlands. Her ambition is for her group to grow into an internationally-renowned research group.

“In my fourth year I did an internship in Tokyo, in the Toshiba research department. I was clearly told what my job was, and I had to stick to it, even if I found something else that was interesting. That made me decide not to go into industrial research. When I was around 22, I started to think I’d like to become a professor. I thought it would be great to decide for yourself what research you want to do, to follow your curiosity and to have the freedom to study what interests you most. Being a professor is a busy job, especially because I’ve been able to fulfill another wish: becoming a mother.

My own ideas

As the professor of a new group I give a lot of lectures. Fortunately, I always liked explaining what I’m working on. I’m currently supervising eight PhD candidates. That’s about the maximum number, until an assistant or an associate professor is appointed to my group. As a professor, you’re increasingly expected to gain your own research funding. I have no trouble writing articles and research proposals. When I started here, I was able to write my own applications for grants, and I could build my research group from the ground up. That’s quite exceptional, and it means that all the work we’re now doing is based on my ideas.

Smarter separation methods

My main research theme is energy-efficient chemical separation processes. There’s a lot of interest in my field because many chemical companies use separation technology. That accounts for 60 to 80 percent of their costs, so finding smarter separation methods can save a lot of money. For example, we’re doing research into desalination, biogas purification and biomass fractionation, as well as into the use of natural solvents in different separation processes. These

are substances that are produced in plants, and can be used as solvents for biorefinery processes. I think there are a lot of opportunities in the coming years, not only for collaboration with the chemical and energy industries, but also in areas like water purification, the paper industry and the life sciences. My research currently has a strong focus on biology. I'm really enthusiastic about imitating nature in separation processes. I like the freedom to do research into subjects like these.

Ambitious

I had a great time in Delft, and after that I was given the opportunity in Eindhoven to start as a professor. TU/e is an ambitious university. Taking this position was a strategic move for me, because Process Technology is growing here. It means working together with different kinds of people. TU/e has few intermediate layers, which means it's easy to approach people. If I have to present an application for research funding, I practice it first in front of my colleagues, and then I just might find the dean is also there. The opportunity to start my own group is also related to the size of the university – it would be much harder to do this at a larger university.

It gives me great satisfaction when my students are successful. If we're awarded a grant, or if a graduating student wins a first prize in an international competition, the whole group goes out for a drink in the evening or for a meal. We inspire each other to excel. You can really see people grow when they do their graduation work here."

"It gives me great satisfaction when my students are successful"

“We inspire each other to excel”