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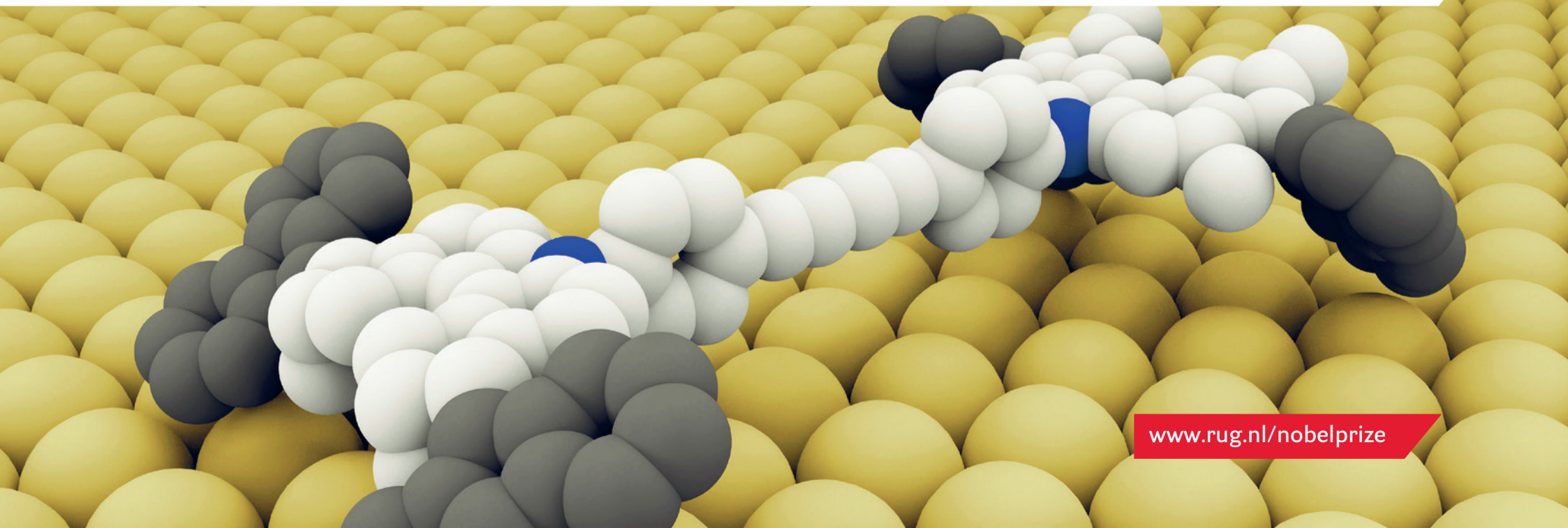


# Nobel Prize for Ben Feringa



On 5 October, it was announced that Professor **Ben Feringa** had been awarded the 2016 Nobel Prize in Chemistry. It is the most prestigious academic award in the world. Feringa shares the Prize with Jean-Pierre Sauvage (France) and Sir James Fraser Stoddart (UK), in recognition of their work on the development of molecular machines.

[Read all about the second Nobel Prize winner at the University of Groningen.](http://www.rug.nl/nobelprize)



# The first day as a Nobel Laureate

On Wednesday morning just after a quarter to twelve, the chairman of the Nobel Committee starts his announcement. This year's Nobel Prize for Chemistry goes to the tiniest machines, he says. Then he reads out the names of the three winners, and the third is Bernard L. Feringa. What everybody in Groningen had hoped for has happened.

About fifteen minutes after the announcement, the corridor outside Feringa's second floor office is crowded. His entire department appears to be there, most of them with huge grins on their faces. As of today, they are working in the lab of a Nobel Laureate.

However, the Laureate is nowhere to be seen. He is inside his office, on the phone, talking live to the press in Stockholm. When the excited noises in the hall become a bit too loud, people hiss 'quiet!', so as not to disturb him. They want quiet as they are listening to what he's saying through the Nobel website on their smartphones.

Then Feringa appears, and a huge cheer goes up and applause erupts. Emeritus professor Jan Engberts, the Nestor of the Institute, congratulates him with a short speech. 'We all hoped for this, and now it has become reality'. Then, Ben Feringa addresses the crowd. 'I am deeply honoured', he says, the emotion audible in his voice.

'None of this could have happened without all the hard work of all the brilliant students and staff. Thank you so much. I hope this will help you in your careers.' Then the door closes again.

Soon, the first journalists gather in the Chemistry and Physics building, followed by camera crews. The building is buzzing, especially when a celebration is announced for 3 p.m. in a large lecture room. The room is packed long before that time, and even the hall outside is filling up rapidly. When Feringa finally arrives, the place explodes, and he is cheered non-stop.

Words of praise and gifts follow. Among them a toy Ferrari, a running gag in the Faculty ever since Feringa built the world's first molecular car. His wife and two of his daughters are also present, and Feringa draws the important role of a top scientist's partner to everyone's attention.

Next, he goes to the centre of town, where a press conference has been scheduled in the Academy Building. The red carpet is out. Whether for the Nobel Laureate or the students getting their degrees today, it doesn't really matter. Again, Feringa thanks and praises his students and colleagues. The world watches the press conference via a live stream. More interviews follow, and then Feringa is off to Hilversum, for a live interview on the TV programme Nieuwsuur. Then it's on to Amsterdam, where more journalists await him tomorrow at a press session at the Royal Dutch Academy of Sciences.

## Curriculum vitae

As a boy Feringa wanted to be a farmer. His change of heart has resulted in him being awarded the Nobel Prize in Chemistry. Ben Feringa grew up in Barger-Compascuum, in the Drenthe Province of the Netherlands as the son of a farmer. Intrigued by the complexities of nature, Feringa became fascinated by chemistry, which enabled him to be creative and invent new worlds. He studied chemistry in Groningen in the internationally renowned research group of Professor Hans Wijnberg, who introduced Feringa to his scientific network, among whom future Nobel Prize winners. The moment when Feringa made his first own new molecule was life changing. After a short time working as a research scientist at Shell, he returned to the UG to succeed his mentor Wijnberg. Feringa focused on nanotechnology, and in 1999 he developed a 'molecular motor': a light-driven rotary molecular motor, known as the nanomotor. This was Feringa's fundamental breakthrough and a molecular car followed. This year, he has presented a rotary motor driven by chemical energy, making it more suitable to work with inside the human body.

**1951 Born in Barger-Compascuum > 1974 Chemistry Degree, Groningen > 1978 PhD Chemistry, Groningen > 1979 Researcher at Shell, Amsterdam > 1984 Lecturer Organic Chemistry, Groningen > 1988 Professor of Organic Chemistry, Groningen > 2003 Director Stratingh Institute for Chemistry > 2004 Spinoza Award > 2008 Academy Professor Royal Netherlands Academy of Science > 2008 Knight in the Order of the Netherlands Lion > 2013 Marie Curie Medal > 2015 Wilhelm August von Hofmann Medal > 2015 Chemistry for the Future Solvay Prize**

Feringa is married and has three daughters.



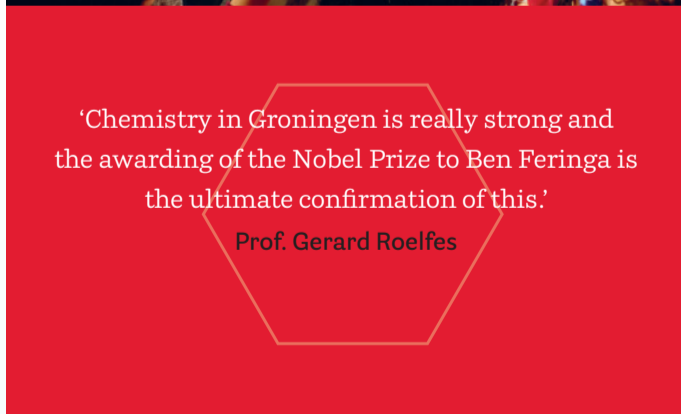
'Wonderful news for the Stratingh Institute for Chemistry! Now even more talented young researchers from around the world will want to come work with us.'

Prof. Kees Hummelen



'Ben's greatest strength is bringing people together and inspiring them with his creativity and drive to try the untried. It's fantastic to see this attitude rewarded like this.'

Prof. Syuzi Harutyunyan



'Chemistry in Groningen is really strong and the awarding of the Nobel Prize to Ben Feringa is the ultimate confirmation of this.'

Prof. Gerard Roelfes



'You are one of the wisest people I have ever seen. I really like your speech, simple but profound.'

Zhuohua Sun, PhD student



# Nature and nurture



**We are all products of our personal talents and our environment. This also applies to Ben Feringa. Of course, his unique talent and personality is what got him the Nobel Prize. But environmental factors have helped.**

Feringa's formative years as a scientist were spent under the wing of organic chemistry professor Hans Wijnberg (1928-2011). This colourful scientist was trained in the American academic tradition. This meant he had a preference for highly innovative work, non-hierarchical structures and he also combined science with an entrepreneurial spirit.

Wijnberg's influence can be seen in the way the Faculty of Mathematics and Natural Sciences is currently organized. As is the case in the American system, staff members who meet the criteria become full professors. This is in contrast to the classic Dutch system where a fixed number of professorships is available.

Ben Feringa spent time in Wijnberg's lab as an undergraduate and later gained his PhD under his supervision. In 1988, he succeeded Wijnberg as professor of Organic Chemistry. He is one of around a dozen full professors trained by Wijnberg, and one of two Spinoza laureates: both Ben Feringa and Bert Meijer (Eindhoven University of Technology) have received this highest Dutch science award.

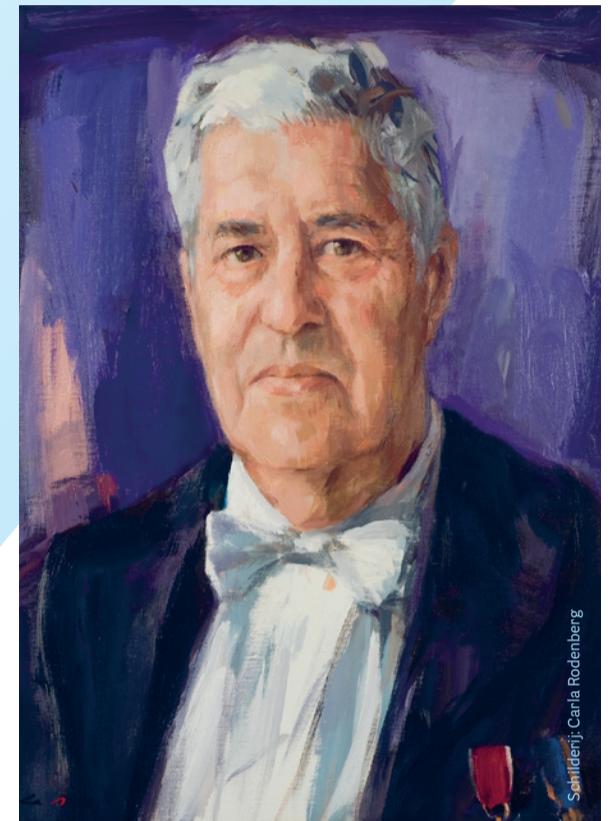
In addition to Wijnberg's legacy, the strongly interdisciplinary focus of Faculty of Mathematics and Natural Sciences is important. The Zernike Institute of Advanced Materials (ZIAM) is a prime example of this approach, where physicists, chemists and biologists work together to design, build and understand new materials. Although he is a member of the Stratingh Institute for Chemistry, Feringa is also part of ZIAM and even has lab space in the Life Sciences building. All this proved fertile ground enabling the brilliant mind of Ben Feringa to flourish.

Former PhD students of Feringa are now becoming professors themselves, such as Gerard Roelfes, who will give his inaugural lecture in November. Who knows, hopefully one day a former student of Feringa's may tread in his footsteps and be awarded a Nobel Prize.

Prof. Feringa has been the primary supervisor of 111 PhD students (2 degree ceremonies are planned for November 2016). The 100th PhD ceremony was held on 13 December 2013. At this moment Feringa's group consists of:

- > 21 PhD students
- > 7 postdocs
- > 2 guest researchers
- > 1 intern
- > 14 students (Bachelor's and Master's)

[www.benferinga.com/group.php](http://www.benferinga.com/group.php)



Professor Hans Wijnberg



'There is a transcendent innocence to Bens's ardor for science that is deeply inspiring.'  
 Prof. Ryan Chiechi



'The enthusiasm of Ben Feringa for fundamental science and his creativity are an inspiration both for the students and the colleagues.'

Dr Martin Witte



'Some people do great science through overcoming barriers – Ben stands apart; there are no barriers to his imagination and passion.'

Prof. Wesley Browne



'Whereas Sybrandus Stratingh built his electromagnetic motor, in Groningen in 1830, Ben Feringa reported on his molecular motor in 1999. Imagine what we are up to!'

Prof. Adriaan Minnaard



# A molecule builder

The eyes of the brand new Nobel Prize winner are full of excitement and emotion, due to a love of life and his work. Feelings of disbelief, happiness and thankfulness visibly struggle for prominence. This is the real Ben Feringa: a brilliant and passionate scientist, as well as a warm and sensitive person.

When asked what the secret is to successfully keeping a research group at the top of its field in the world, he falls silent. He then says: 'It is my privilege to work with unbelievably talented young people. It is a team of people from 18 different countries all looking for scientific challenges, who think: what is the real question here?'

*'It is my privilege to work with unbelievably talented young people.'*

He has also been teaching 1st and 2nd-year students for over 30 years. When he was a third-year student, he fell in love with the field thanks to the teaching of his professor, Hans Wijnberg. 'He inspired me to do original things, to look beyond the frontiers. It was in his lab that I made a new molecule for the first time. I got such an enormous kick from that – your own molecule... building your own world. I instantly gave up all my plans to switch to mathematics.' In 1988, Feringa succeeded his mentor and has continued to try and maintain the same atmosphere. 'Wijnberg was

full of ideas, loved tackling new things and was able to make everybody enthusiastic. He treated his students as fully fledged partners in his research. There was an ambitious atmosphere throughout the entire organic chemistry lab; we wanted to be the best. It is important to create an atmosphere in which people work in the true vanguard of science, who want to go beyond the frontiers.' Personally, Feringa is less interested in crossing geographical boundaries: 'I am so unbelievably happy that I am in Groningen, and that I have stayed in Groningen.'

## Four-wheel-drive molecular car

'I am a molecule builder,' says Feringa: 'I try to make clever molecules. It's not really that hard to make a moving molecule, the point is that you have to be able to steer it, that you have control over what happens. The same applies to catalysts, molecules that help a substance turn into another substance. What you want is for that single product to be created and not a mishmash of molecules.' This is why Feringa practices nanotechnology: his building blocks are molecules at the scale of 1 millionth of a millimetre, a nanometre. That's unbelievably small, and yet in 1999 he successfully invented a molecular motor driven by light, a spectacular discovery that garnered attention throughout the world. Following this, in 2011, he made the cover of the scientific journal *Nature* with his four-wheel-drive molecular car. The Nobel Prizewinner is an advocate of fundamental research: 'There are questions to which the answer and the route to the answer are more or less known. The real challenges lie right at the other end of the spectrum, where the route is unknown, and where we often don't even know the right question and certainly not the answer. Universities are places where rebellious ideas can emerge, there is great freedom to think in whatever direction you want. They are the playing fields for science. And it should stay that way.'

## The Nobel Prize

The will of the Swedish inventor Alfred Nobel established the prizes in 1895. The prizes in Chemistry, Literature, Peace, Physics, and Physiology or Medicine were first awarded in 1901. The related Nobel Memorial Prize in Economic Sciences was established by Sweden's central bank in 1968. Between 1901 and 2015, the Nobel Prizes and the Prize in Economic Sciences were awarded 573 times to 870 individuals (822 men and 48 women) and 23 organizations. Among these were Heike Kamerlingh Onnes (a former student at the UG), Albert Szent-Györgyi (a former researcher at the UG) and Frits Zernike (full professor at the UG). Zernike received the prize in 1953.

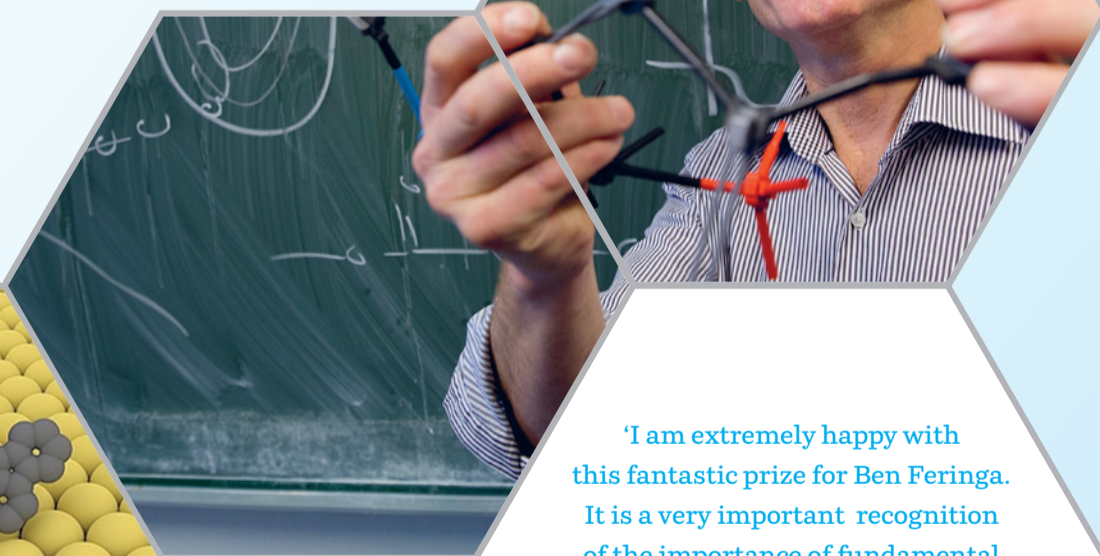
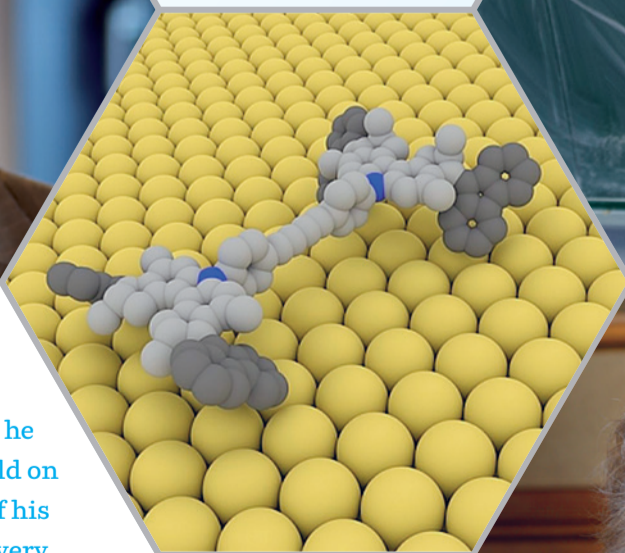
The prize ceremonies take place annually in Stockholm, Sweden (with the exception of the peace prize, which is held in Oslo, Norway). Each recipient, or laureate, receives a gold medal, a diploma, and a sum of money that has been decided by the Nobel Foundation (about € 0.93 million). The Nobel Prize is widely regarded as the most prestigious award available in the fields of literature, medicine, physics, chemistry, peace, and economics.

The Royal Swedish Academy of Sciences awards the Nobel Prize in Physics, the Nobel Prize in Chemistry, and the Nobel Memorial Prize in Economic Sciences; the Nobel Assembly at Karolinska Institutet awards the Nobel Prize in Physiology or Medicine; the Swedish Academy grants the Nobel Prize in Literature; and the Nobel Peace Prize is awarded not by a Swedish organisation but by the Norwegian Nobel Committee.



'Ben Feringa has an extraordinary amount of creativity and energy, which he has used to turn the nano world on its head. An important part of his success is due to him being a very inspirational lecturer and a magnet for talented young researchers.'

Prof. Jasper Knoester, Dean of the Faculty of Mathematics and Natural Sciences



'I am extremely happy with this fantastic prize for Ben Feringa. It is a very important recognition of the importance of fundamental research.'

Prof. Elmer Sterken, Rector Magnificus of the University of Groningen

