

KAVLI NEWSLETTER

Kavli Institute of Nanoscience Delft

No.01

March 2011

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Image:
Artist's impression of the spin-orbit qubit.
Like in a yo-yo toy, by moving the electron
one controls its spin. (See page 2)
Credit: Gemma Plum



From the director

WELCOME TO THIS FIRST NEWSLETTER

With this very first newsletter, we start a new medium of communication within our Kavli Institute of Nanoscience at Delft. Why that? Well, because I feel that it is useful to have a vehicle where we can regularly inform each other, hear about recent highlights and developments, learn about the upcoming Kavli Colloquium, et cetera. This is increasingly important now that we have two departments, Quantum Nanoscience and Bionanoscience.

We plan to have three of these newsletters a year, connected to the Kavli Colloquia and the annual Kavli day. Each newsletter will prominently provide information about the upcoming Kavli Colloquium. Furthermore it will provide self-introductions written by new faculty members arriving at the Institute, feature two regular columns written by persons from the two departments (with Yuli Nazarov and Jan Lipfert leading the way), and mention a variety of other news ranging from striking recent papers, prizes, new equipment at our Kavli Nanolab, and other noteworthy news. In this issue you can learn about the Kavli Colloquium by Ali Yazdani planned for April 14, enjoy the introductions by new faculty members Bertus Beaumont and Gary Steel, as well as hear from Hans Mooij about the festivities connected to winning the Kavli Prize. Since this newsletter is a new experiment, your feedback and input on content and format is very welcome!

Looking ahead

Last September I succeeded Hans Mooij as a director to the Institute. I will try to follow in his noteworthy footsteps in using the opportunities provided by our Kavli Institute for the benefit of science of the highest quality. The main challenge ahead of us is to consolidate the recent choice to expand the Institute into the exciting direction of the interface of nanoscience to biology, while at the same time renewing and enforcing the existing strength in quantum transport. As a director of the Institute, it is my mission to pursue these two goals while at the same time maintaining a coherence between these different branches of nanoscience and promoting fruitful interactions among the researchers at the Institute.

New Prizes at Kavli Delft

We will enhance our exposure through this newsletter and a new website (check out kavli.tudelft.nl or kavli.nl). Although

the available funding will be relatively limited in the coming years – because we made some significant investments in the past year – our Kavli Institute provides opportunities beyond what can be achieved in the regular setting of our University. As a small but important new initiative I would like to announce the installment of two new prizes:

Continues on page 2 >



Cees Dekker



Column

GENERATION 2010

For a sufficiently deep physicist, time is both relative and irrelevant. This is why only recently I came to a new insight: neither Cees Dekker, nor me, nor Leo Kouwenhoven are just-started faculties. Even Herre van der Zant has accomplished his studies a while ago. The marvelous and heretic scientific developments that energized our early careers became a commonplace. They have formed well-established fields, that have already traditions, rituals, known pathways and no-trespassing signs that indicate the sub-fields. They wrote about our research: "New times ahead". Now they'd write: "New times long past". Fortunately, we have enough influence to prevent this.

The immediate reason for the new insight were new appointments made in 2010. Finally, new faces! Really new: for a change, they are not our students and postdocs and KNAW/NWO fellows (well, almost). From bio side, there are Bertus Beaumont, Christophe Daneion, David Grunwald (Sorry Sander, for me your face doesn't count new). From quantum side, those are Leo DiCarlo, Gary Steele, Sander Otte. This is a real change of guard, the whole new generation to shape the future of our Kavli Institute. Frankly and strictly personally, I'd love to see you more frequently: some I've seen only once. Yet this does not count, I understand how busy you are setting up your environment. What does count is the long-awaited novelty you bring, and the hope that your active research will make your novel fields outdated as fast as ours did.

Since I was a starting faculty only yesterday, would you mind a piece of advice (sure you need one).

- In the course of my first year, I got a new surprise every day. Once that was a pleasant one.
- Shortly after I started, they announced budget and job cuts. (Does this sound a history? Then it repeats itself). The natural and just law: "last in, first out" was not applied to me only because somebody said: "over my dead body". Always have somebody (disposable) around.
- If confronted with a (scientific) no-trespassing sign, just go ahead. Yes, they will shoot. Yet your little sacrifice will advance science as whole.
- If not satisfied with your working conditions (no separate room, no promotion rights, closed toilets, etc.), fight for those and unite for fight. Annoy your colleague to make her/him equally unsatisfied. Friends are nice, allies are important.

Welcome from the deep of my heart!

• **Yuli Nazarov**

> Continued from page 1

- **The Kavli Delft thesis prize:**
A prize for the best PhD thesis written by a graduate student at our Kavli Institute of Nanoscience at Delft in the previous two years. This prize, which consists of an award and an amount of € 3000,- that can be freely spent by the laureate, will be given out every two years and awarded at the annual Kavli day in September.
- **The Kavli Delft publication prize:**
A prize for the best publication that resulted from our Kavli Institute of Nanoscience at Delft that appeared in print in the previous two years. This prize, which consists of an award and an amount of € 3000,- that can be freely spent by the laureate, will be given out every two years and awarded at the annual Kavli day in September.

The two prizes will alternate in timing: This year 2011 we will award the Kavli Delft thesis prize, next year the publication prize. And so on.

Kavli Colloquia

Let me also update you on the upcoming Kavli Colloquia. I have asked four

From the director

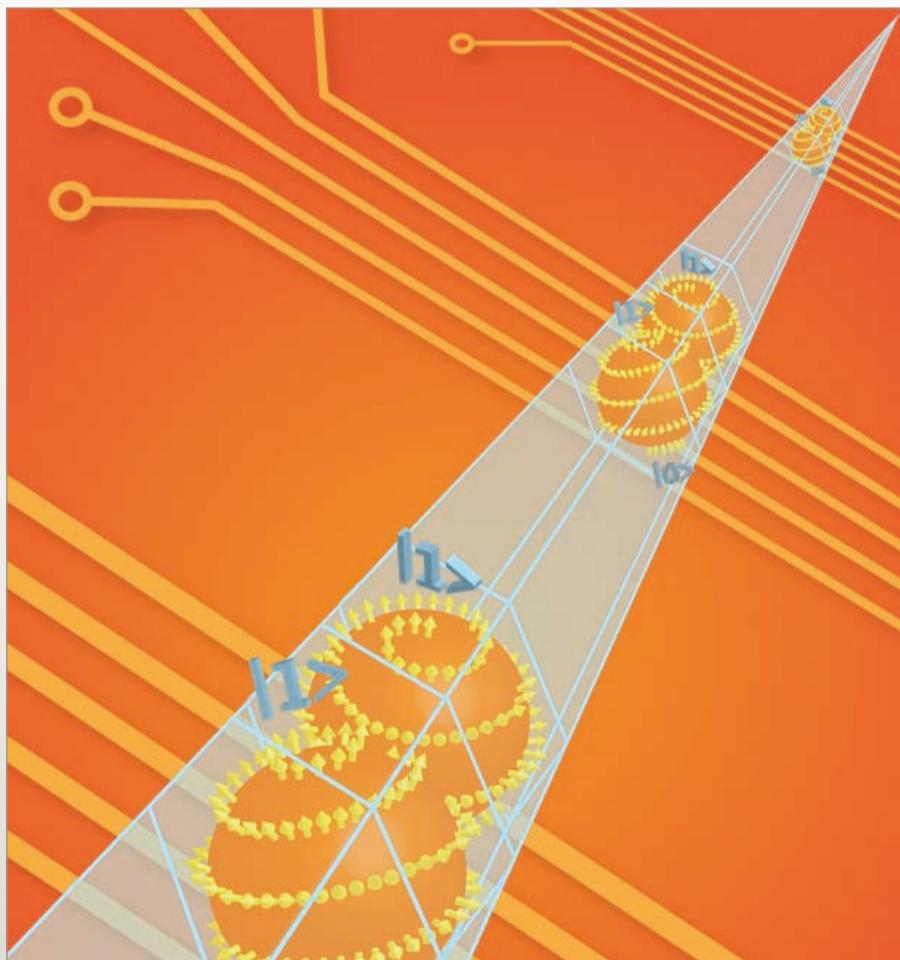
colleagues (Leo Kouwenhoven, Sander Otte, Nynke Dekker, Elio Abbondanzieri) to form a committee that advises me on various Kavli matters such as these prizes, but in particular also on the question of who to invite for the Kavli Colloquia. I see these Kavli Colloquia as central events of major importance for our Institute. For these colloquia, we invite high-level speakers that do leading work and who can present their research to a broad audience ranging from biologists to quantum physicists. On April 14, Ali Yazdani from Princeton will speak on topological insulators, as highlighted elsewhere in this newsletter. Then on June 22, Steven Quake will come over from Stanford to talk about DNA sequencing. Finally, we have already secured the recent Nobel laureate Kostya Novoselov from Manchester to speak next year (on April 12, 2012). Plans for the Kavli day and a colloquium this fall are in the making.

All in all, I am looking forward to lots of exciting events. For now, I hope you enjoy reading this newsletter.

• **Cees Dekker**

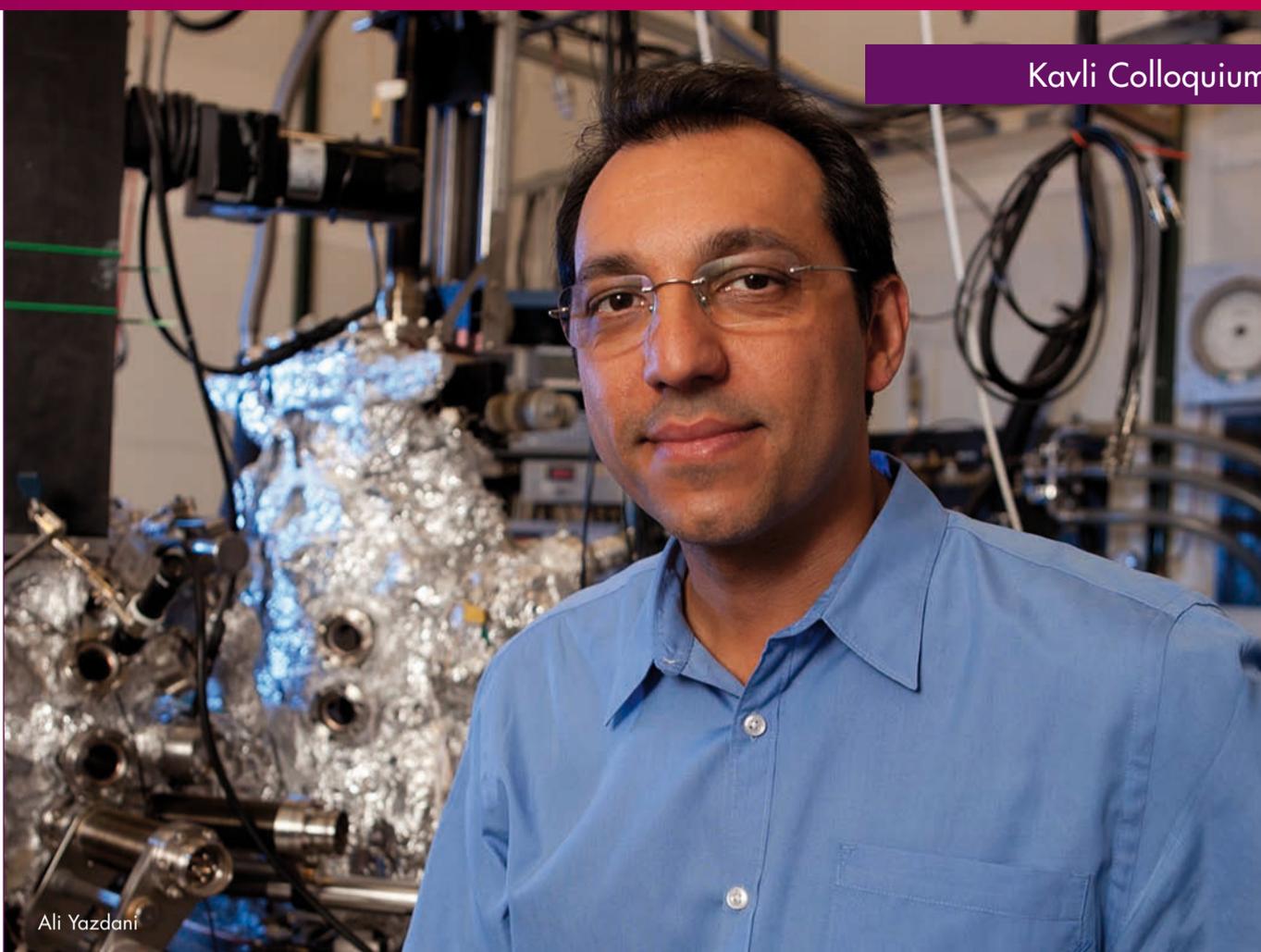
News

SPIN-ORBIT QUBIT



The group of Leo Kouwenhoven (QN/QT) and Erik Bakkers (TU/e and part-time professor at QN) have succeeded in controlling the building blocks of a future super-fast quantum computer. They are now able to manipulate these building blocks (qubits) with electrical rather than magnetic fields, as has been the

common practice up till now. They have also been able to embed these qubits into semiconductor nanowires. Their findings have been published in Nature. (Nadi-Perge, S., S.M. Frolov, E.P.A.M. Bakkers and L.P. Kouwenhoven, Spin Orbit qubit in a semiconductor nanowire, Nature 468, 1084-1087, 2010) •



Ali Yazdani

VISUALIZING HELICAL METALS ON THE SURFACE OF TOPOLOGICAL INSULATORS

ALI YAZDANI, PRINCETON UNIVERSITY

April 14, 2011 will feature a Kavli colloquium by Ali Yazdani. On April 15 he will additionally present a lecture "STM visualization of correlated electronic states." The abstract for Yazdani's Kavli Colloquium on topological insulators reads as follows:

Soon after the discovery of quantum mechanics it was realized why some solids are insulating (like diamond) and others are highly conducting (like graphite), even though they could be comprised of the same element. Now, 80 years later, the concept of insulators and metals is again being fundamentally revised. During the last few years, it has become apparent that there can be a distinct type of insulator, which can occur because of the topology of electronic wave functions in materials comprised of heavier elements. Strong interaction between the spin and the orbital angular momentum of electrons in these compounds alters the sequence in energy of their electronic states. The key consequence of this topological characteristic (and the way to distinguish a topo-

logical insulator from an ordinary one) is the presence of metallic electrons with helical spin texture at their surfaces. I will describe experiments that directly visualize these novel quantum states of matter and demonstrate their unusual properties through spectroscopic mapping with the scanning tunneling microscope (STM). These experiments show that the spin texture of these states protects them against backscattering and localization. These states appear to penetrate through barriers that stop other electronic states. I will also describe more ongoing efforts focused on unraveling the physics of topological surface states and their potential applications for the realization of other exotic quantum states, such as Majorana fermions. •

PRE-PROGRAM ON GRAVITY

The Kavli Colloquia feature one main external speaker, this time Ali Yazdani. Next to that, we have a short pre-program, usually with internal speakers. On April 14, we will have a special pre-program on Gravity for which we invited two excellent speakers from Holland:

Dirk Bouwmeester from Leiden University/UC Santa Barbara, who will speak on 'Investigating gravitationally induced

quantum decoherence', and Erik Verlinde from the University of Amsterdam, who will speak about 'The emergency of gravity'. Bouwmeester is setting up experiments on gravity, while Verlinde caught everyone's attention by proposing that gravity is not fundamental, but an emergent phenomenon that arises from a deeper microscopic reality. •

COME AND LISTEN ON APRIL 14!

Kavli Colloquium

"VISUALIZING HELICAL METALS ON THE SURFACE OF TOPOLOGICAL INSULATORS"

Date : April 14, 2011 at 15.00 hours
Location : Aula TU Delft, lecture room A

Extra seminar

"STM VISUALIZATION OF CORRELATED ELECTRONIC STATES"

Date : April 14, 2011 at 14.00 hours
Location : TN building, lecture room F

A QUANTUM FUTURE FOR MECHANICS

Introduction new faculty



Gary Steele

GARY STEEL, A SELF-INTERVIEW

Tell something about your background.

I was born in Toronto, Canada, and studied physics at McGill University in Montreal before moving to MIT for my doctoral studies. At MIT, I worked with Ray Ashoori, where I studied the Quantum Hall Effect using a low temperature scanning capacitance microscope. After my PhD, I joined Leo Kouwenhoven's group to work on nanotube quantum dots, where I developed a clean suspended nanotube device that was significantly different from those made before. Essentially we "did the fabrication backwards", starting with electrodes and gates on the substrate, and growing nanotubes over top in the last step. This technique led to a breakthrough in both the electrical and mechanical properties of carbon nanotube devices.

What are your research plans within QN?

The theme of my research will be Microwave Nanomechanics. The focus of my group will be to develop high frequency nanomechanical devices based on unconventional materials, such carbon nanotubes and graphene, and to detect their motion directly using RF and microwave measurement tech-

niques at cryogenic temperatures. The combination of high frequency devices and low temperatures will allow us to explore the effects of quantum mechanics on their mechanical motion, and by expanding our current DC measurements to the microwave regime, we can directly listen to their quantum vibrations.

I also collaborate with Val Zwiller on nanotube optoelectronics, and with Leo Kouwenhoven on nanotube spin qubits. I recently started a new project with Leo, which we call a "nano-flipchip microscope". Our goal is to completely decouple nanofabrication from the material itself. We will do this by positioning gates, sensors, and other devices made on a separate chip nanometers above a pristine unprocessed material, such as a high mobility 2DEG. We will first use it to study the 5/2 FQH state, but it could have a much broader application for making nanostructures in new materials, and for nanomechanics.

What is your first impression of the Kavli Institute of Nanoscience Delft?

Of course, I have had some time already to form an impression...and it is clearly positive. The high concentration of top people in my field makes it very stimulating intellectual environment. Also crucial are the extensive facilities, including the Kavli Nanolab and our skilled technicians: these ensure that research progresses at a fast pace.

Do you have suggestions for what the Kavli Institute could do (more)?

We could benefit from a more concentrated effort to recruit students and postdocs from abroad. For this, increasing the international profile of the Kavli Institute in Delft, starting with a better webpage, for example, would help.

Unexpected hobbies?

I have recently become a speed skating enthusiast, and skate regularly at the Uithof. In the spring and summer, I enjoy cycling and sailing (when the weather is nice). I am also passionate about food and cooking.

Research/Science anecdote?

I agree with Geim: There are no bad samples. Only researchers who haven't spent enough time in the cleanroom...

• Gary Steele

New employees

NEW EMPLOYEES DEPARTMENT BIONANOSCIENCE

Name	Date of employment	Title	Lab
Anne Meyer	01/01/2011	Assistant Professor	Anne Meyer lab
Elio Abbondanzieri	01/01/2011	Assistant Professor	Elio Abbondanzieri lab
Chirlmin Joo	01/01/2011	Assistant Professor	Chirlmin Joo lab
Jetty van Ginkel	02/01/2011	PhD student	Chirlmin Joo lab
Dominique Meijer	02/01/2011	Management Assistant	Department
Thierry Janssens	02/15/2011	Post Doc	Bertus Beaumont lab
Magnus Jonsson	03/01/2011	Post Doc	Cees Dekker lab
Maarten van Oene	03/01/2011	PhD student	Nynke Dekker lab
Yeom Kyu Yeon	03/01/2011	Post Doc	Chirlmin Joo lab
Marijn Versteegh	04/01/2011	Post Doc	Nynke Dekker lab

NEW EMPLOYEES DEPARTMENT QUANTUM NANOSCIENCE

Name	Date of employment	Title	Section
Arjan Beukman	01/01/2011	PhD student	QT
Carlos Arroyo Rodriguez	01/01/2011	Post doc	MED
Peter Low	01/01/2011	PhD student	NAF
Ulrike Ziese	01/01/2011	Postdoc	HREM
Robert Metzger	02/15/2011	Guest	MED
Michele Buscema	03/01/2011	PhD student	MED
Enrique Burzuri	03/01/2011	Postdoc	MED
MengYue Wu	03/01/2011	Postdoc	HREM
Pasquale Scarlino	03/01/2011	PhD student	QT
Maaike Bouwes Bavinck	03/01/2011	PhD student	QT
Tim Taminiau	03/01/2011	Postdoc	QT
Reinier Janssen	04/01/2011	PhD student	NF

KAVLI PRIZES 2010

Kavli Prizes 2010



Don Eigler (right) and Ned Seeman (middle) receiving their Kavli Prizes from the king of Norway.

On September 7, 2010 the Kavli Prizes were presented to their winners in a festive ceremony in Oslo. I went there to represent our Kavli institute and participated in most of the events. The format was very similar to the first Kavli Prize ceremonies in 2008, the main difference was that now the king of Norway presented the prizes to the winners, whereas the previous time the crown prince performed this duty.

As with the institutes, there are three categories in the Kavli prizes: astrophysics, neuroscience and Nanoscience. In 2008 the nanoscience prizes went to chemists who developed new nanoparticles, Iijima for his carbon nanotubes and Brus for his colloidal nanocrystals. This time the prize of one million dollars was shared by Donald Eigler (IBM Almaden) and Nadrian Seeman (New York University). The first is very familiar to us. Don received an honorary doctorate of Delft University in 2002 and he visited us many times. Take a special look at Don in the picture. You will not only see the rare sight of him wearing a necktie, but the experts will notice that it is a Delft University species (I did not realize until he told me). I did not meet Ned Seeman before, but to Cees Dekker he was certainly very familiar. He visited our institute to give a seminar back in 2000, when biophysics was starting at Delft.

Both prize winners used very new and very special methods to fabricate atomic-scale nano systems and studied their new properties. Don Eigler developed a fantastically (at that time) stable low temperature STM, prepared ultra-smooth copper surfaces and manipulated single iron atoms on that surface. He and his people could pick up an atom with their tip and deposit it at one of the lattice sites of the surface. The picture shows the quantum corral with in red the quantized electronic surface states, as detected with the same STM that was used in fabrication. On Don's website <http://www.almaden.ibm.com/vis/stm/gallery.html> more can be found.

Ned Seeman is a biochemist who with his people developed methods to attach 'sticky ends' to a DNA branched junction to construct stick figures where the edges are double-stranded DNA. Single macro-objects such as cubes or octahedrons can be obtained but also nanomechanical devices and 2D or 3D crystals. The picture shows an example, more can be seen on their website <http://seemanlab4.chem.nyu.edu/>

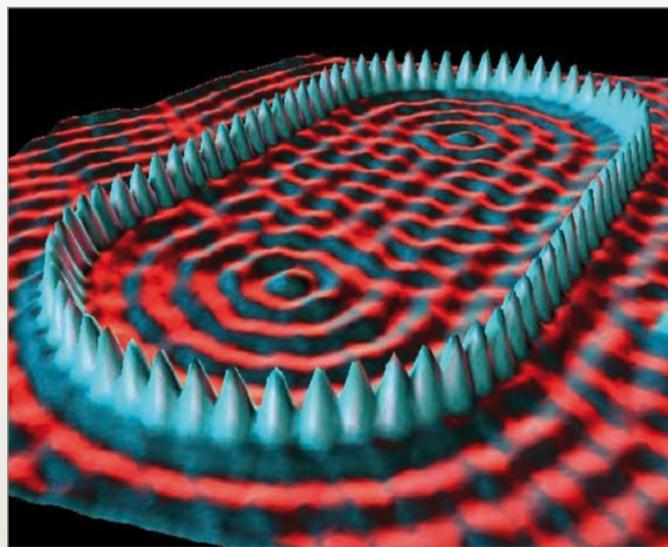
The Kavli Prize for astrophysics went to Nelson, Wilson and Angel who developed special methods to build a new generation of optical telescopes for astronomical observation. In neuroscience, Scheller, Südhof and Rothman were the winners. They made important contributions to the understanding of the communication of nerve cells. Look at <http://www.kavlifoundation.org/kavli-prize> to learn more.

The Kavli Prize ceremonies are not restricted to the presentations of the diplomas and the checks to the winners. On the Kavli website it is called Kavli Week <http://www.kavlifoundation.org/kavli-prize-week> Everything is very well organized and very well catered. The official host is partly the Norwegian Academy of Sciences who is responsible for the selection process. I attended a reception by Fred Kavli on Sunday evening. On Monday there was a Nanoscience symposium (in parallel to astrophysics and neuroscience symposiums), followed by a Kavli Prize Science Forum devoted to the role of science in society. Main topic was climate change, and the duties/responsibilities of scientists in that messy discussion. There were some excellent speakers. During the day

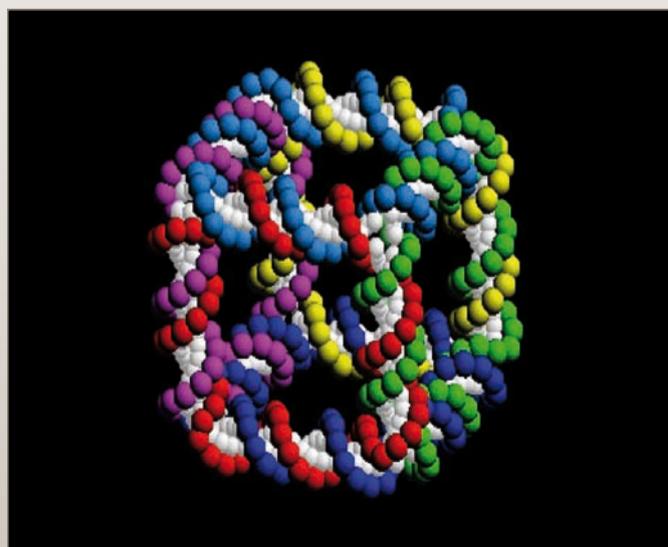
also Bill Bryson (author of 'A short history of nearly everything', among many other books) gave two public lectures. Tuesday had the official presentations, followed by a grandiose banquet with about 1000 eaters in the Oslo City Hall on the harbor side. The dress code was black tie/national costume. Indeed, many of the Norwegian guests, including the minister but not the king, wore their local folkloric costume. Wednesday the prize winners gave formal Laureate Lectures. The whole circus moved on to two sites elsewhere in Norway where two-day meetings on Nanoscience and neuroscience (both in Trondheim) and astrophysics (in Tromsø) were held. I did not go there this time.

In 2012 there will be a new round of Kavli Prizes. The best is to win one of them, the next best is to attend some of the festivities. It is fun.

• Hans Mooij



Quantum corral made by Eigler, using single Fe atoms on a copper surface.



Nanocube fabricated by Seeman, using DNA strands as templates.

Introduction new faculty

BERTUS BEAUMONT, A SELF-INTERVIEW

Imagine a tiny, self-replicating machine that is built from nano-components and has the potential to evolve into new machines of higher complexity. On a very good day, this is what I 'see' when looking at bacteria under the microscope.

I have always been fascinated by how things work. As a child I discovered the joys of 'reverse engineering' at an early age. It began with taking apart old toys—but my ambitions were bigger. One day, I took my explorations to a new level: the family video recorder. With each screw unscrewed, I delved deeper into an exciting new world. Although the reassembly process was, well... a lot less enjoyable, it did not stop me from subjecting quite a few more appliances to the same examination.

As a biologist, I am driven by a similar curiosity. My PhD research focused on the intriguing bacterium *Nitrosomonas europaea*, which uses ammonia as its source of energy and can use nitrite instead of oxygen for respiration. I studied how the nitrite-respiration gene is controlled in response to changes in the environment. It turned out that this involved a novel protein that senses a breakdown product of nitrite and modifies the gene's activity accordingly. The more I learned about the molecular machinery of this bacterium, the more I wondered about its origins.

This question led me to the field of experimental evolutionary biology. Although evolution is a relatively slow process that is often studied using comparative methods, experimentation is possible. In the group of evolutionary biologist Paul Rainey, I worked with bacteria that undergo a miniature version of the evolutionary diversification process that gave rise to Darwin's finches. In only three days, bacteria of a single ancestral type evolve into a diverse population of specialized types. We used this system as a model to study what



Bertus Beaumont

it is about the molecular architecture of cells that allows them to evolve—from the mutations in the DNA up. The experiments supported the hypothesis that modularity facilitates evolution and captured, for the first time, the evolution of a risk-spreading strategy predicted by theory.

But the simplicity of a bacterial cell can be deceiving. Much about how the effects of mutations percolate through the network of interacting sub-cellular components to change the cell remains unknown. One way of reducing this complexity is to study the evolution of only a subset of components. This is possible using the tools of molecular biology. In collaboration with biophysicist Sander Tans, I started using this approach to study how mutations that do not change a component's function can still affect its evolutionary future, a project in progress.

My move to the Department of Bionanoscience of the Kavli Institute of Nanoscience Delft marks the next step in this direction. Without a very lively im-

agination, bacteria under an ordinary microscope look like nothing more but tiny spheres, rods or spirals. However, with the tools of bionanoscience it is possible to visualize, manipulate and characterize their molecular components. In the Delft Kavli Institute I hope to extend our understanding of evolution at this level. One objective is to study the bacterial flagellum: the self-assembling nano-motor used by bacteria to swim. Bionanoscience allows characterization of key mechanical properties of the flagellum at the single molecule level. Combined with an experimental evolution approach, it offers a way of investigating how evolutionary tinkering tunes and innovates such intricate molecular machines and may shed light on their evolutionary origins.

Over the years, I have stopped messing with home electronics. But I must admit that a recent iPod battery replacement job—I was inspired by a YouTube instruction video that made it look easy—did bring back good memories.

• **Bertus Beaumont**

News

ERC ADVANCED GRANT FOR HENNY ZANDBERGEN'S NANOLABORATORY

In-situ NanoElectrical Measurements in a Transmission Electron Microscope

Professor Henny Zandbergen has been awarded an ERC Advanced Grant of 2.5 million euros for his research into improved microscopic technologies. The technologies enable Professor Zandbergen to visualize extremely small structures, such as semiconductor nanowires, all the way down to atomic

level. What is especially remarkable is that the structures that are made visible in this way can be measured at the same time. The ERC Advanced Grant is awarded by the EU to scientists of exceptional standing. Previously it was awarded to Leo Kouwenhoven and Cees Dekker in our Institute. •

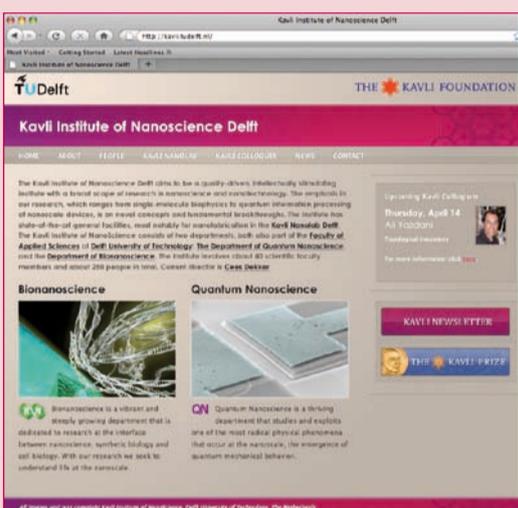
News items

NEW WEBSITE

We have launched a new website for the Kavli Institute of Nanoscience Delft, see kavli.tudelft.nl or kavli.nl. We will try to keep this up to date. All input and feedback is welcome.

Contact person:

Dominique Meijer, e-mail D.A.U.Meijer@tudelft.nl.



KAVLI DELFT THESIS PRIZE

A prize will be awarded for the best PhD thesis written by a graduate student at our Kavli Institute of Nanoscience at Delft. The prize consists of an award and an amount of €3000,- that can be freely spent by the laureate.



A PhD thesis is eligible for the 2011 prize when the thesis defense date was between 1-1-2009 and 1-4-2011. Nominations are welcome from now on. Everyone is welcome to nominate - please send suggestions to Cees Dekker, c.dekker@tudelft.nl.

Deadline for submission is May 1, 2011.

CONTRIBUTE TO THIS NEWSLETTER



Input to forthcoming newsletters is very welcome. Please send any relevant material to Dominique Meijer (D.A.U.Meijer@tudelft.nl). If you like to contribute to this newsletter as an editor, please contact Cees Dekker.

Save the date: September 22

KAVLI DAY WITH PAUL MCEUEN

This year's annual Kavli Day will be held on September 22 2011. Details will be announced later. Special guest that day will be Paul McEuen from Cornell University, a leading scientist in nanoscience and also the Director of the Kavli Institute at Cornell. •



Jan Lipfert

Column

THE CURIOUS USE OF LATIN AND GREEK ANTIQUITY IN DUTCH ACADEMIA

When I first moved to the Netherlands, I was thrilled. Having grown up in Germany with a classical "humanistic" education and Latin as my first foreign language, I still have a significant affinity to the Latin and Greek antiquity. During my high school days, the works of Cesar and Ovid were much closer to my heart than those of Heisenberg and Sanger. After spending six years in the US, where knowledge of the classics does often not go much beyond "veritas" (Harvard), "lux and veritas" (Yale), and random combination of three Greek letters, the Netherlands seemed different. The University celebrates its "dies natalis", not birthday or anniversary. Student groups are named after my heroes from high school. In brief, Dutch academia seemed well attuned to our classical European heritage. However, upon closer inspection, I started to doubt. Is Dutch academia truly rooted in the classics, or are we using Latin phrases as mere "sound bites"?

Arguably the best-known Dutch funding schemes are the "Veni, Vidi, Vici" programs of the Dutch Science Foundation NWO, for post docs, junior and senior PIs, respectively. More recently, the "Rubicon" funding scheme was added, a program for researchers right after obtaining a PhD. "Veni, vidi, vici" is, of course, a quote attributed to Julius Caesar ("I came, I saw, I conquered") who crossed the Rubicon (a river in northeastern Italy) with his legions in 49 BC. The phrase "crossing the Rubicon" to this day is synonymous for making a bold decision, passing a point of no return. Sounds clever, proud, and decisive, doesn't it? But then you wonder. Does starting a post doc really mean passing a point of no return? What if academia does not work out, after all? And don't they know what happened after Caesar crossed the Rubicon? He started a bloody civil war and destroyed the Roman Republic, ruling Rome and the empire as a dictator until his death. Is the NWO trying to tell us that to make the way up through the ranks of academia, you have to be a smart and charismatic, yet ruthless and self-promoting tyrant? I hope not!

It does not stop here: The "Narcis" website is the "gateway to scholarly information in the Netherlands" (www.narcis.nl), an effort set up by the KNAW to provide information on scientific publications, institutions, and researchers in the Netherlands. I don't know what the KNAW had in mind when naming the website, but I do know that Narcissus (the flower "Narcis" is named after him) was a character in Greek mythology, renown for his exquisite beauty, but also his exceptional haughtiness. As divine punishment, he fell in love with his own reflection, wasting away, unable to leave his own beauty. He is the guy who gave us "narcissism". Is this the fate of researchers in the internet age? Are we soon going to be so absorbed "googling" and "narcising" our own research accomplishment and citation scores that no time is left for real research? Again, I hope not.

Finally, our own symbol and patron in Delft: Prometheus. Another character from Greek mythology, Prometheus was a Titan, famous for his intelligence and for stealing fire from the gods and giving it to the humans. His torch put the flame into the TU Delft logo (and not the Bouwkunde-Building fire, as some have suspected). No doubt, he is a symbol of progress and dissemination of knowledge. However, he was severely punished for disobeying the law of the gods: He was chained to a rock, where an eagle would eat his eternally re-growing liver. Is the TU secretly trying to promote research without any regard for morals? Once again, I hope not. Sticking to simple "veritas" is perhaps not so bad, after all?

• Jan Lipfert

Science art



Nuclear pores (red) are the sole mediators of material and information between the two major compartments of the cell, the nucleus and the cytosol. The selectivity of transport for the wide variety of cargoes is still not understood today. Here, export of mRNPs, carrying the processed genetic information form of RNA, is depicted. This image is based on work by David Grünwald and Robert Singer published in Nature 467, 604 (2010)

Please send suggestions for 'Science Art' to Dominique Meijer, D.A.U.Meijer@tudelft.nl

Upcoming Kavli Colloquia



STEPHEN QUAKE

23 June 2011

Stanford University



KOSTYA NOVOSELOV

12 April 2012

University of Manchester



PAUL MCEUEN

22 September 2011

Cornell University

Colofon

The Kavli Newsletter is published three times a year and is intended for members of the Kavli Institute of Nanoscience Delft and those interested. PDF versions of all Kavli Newsletters can be found at www.kavli.tudelft.nl

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