



KATHOLIEKE UNIVERSITEIT
LEUVEN



INVITATION
MINI-SYMPIOSIUM

ADVANCING
SCIENCE: MAKING
A DIFFERENCE



The Faculty of Science and the Department of Physics and Astronomy
invite you to the mini-symposium

Advancing science: Making a difference

with
Prof. Dr. Douglas Osheroff
Laureate Noble Price in Physics 1996

Tuesday, June 24th 2008
Auditorium 00.06 Celestijnenlaan 200L, 3001 Leuven (Heverlee)
Followed by a reception at salons Kasteel Arenberg

Please confirm your attendance before June 19th 2008 to Gonda.Verbruggen@fys.kuleuven.be

Programme

- 15.00h: Welcome
Prof. Dr. Désiré Bollé
Head Department of Physics and Astronomy
- 15.10h: "Programmes for the Future"
Prof. Dr. Marshall Stoneham FRS
Emeritus Massey Professor in Physics
University College London, UK
- 16.10h: "How advances are made in science"
Prof. Dr. Douglas Osheroff
Professor in Physics and Applied Physics
Stanford University, USA
- 17.15h: Reception offered by the Department of Physics and Astronomy

More info: fys.kuleuven.be

Abstracts of presentations

Programmes for the Future

Prof. Dr. Marshall Stoneham FRS
Emeritus Massey Professor in Physics
London Centre for Nanotechnology
Department of Physics and Astronomy
University College London, UK

Many of the big ideas in science have created new technologies. In the 19th century, recognising atoms existed led to the chemical industry. In the 20th century, realising electrons exist gave the microelectronics industry. Today, biomedicine is being transformed by accepting that the processes of life obey the standard laws of physics and chemistry. As quantum behaviour becomes better understood, so it seems to be opening new possibilities. But atoms, electrons and quanta are *rare* big ideas, of the sort that might not happen in any one person's research career. There are plenty of other changes, many unhelpful. The UK science ministers change, on average, every 18 months. Management fashions may destroy major research laboratories. There can be science disasters, like cold fusion. But, behind the turmoil, excitement of challenges can also be opportunities, especially when their mixture is unfamiliar. The problems that I shall discuss combine features special to the nanoscale, quantum information processing, and how your nose manages to distinguish different scents. I hope to convince you that surprises are to be enjoyed and exploited, not suppressed. "The man who draws up a programme for the future", wrote Karl Marx, "is a reactionary."

How advances in Science are made

Prof. Dr. Douglas Osheroff
Professor in Physics and Applied Physics
Laureate Noble price in Physics 1996
Stanford University, USA

How advances in science are made, and how they may come to benefit mankind at large are complex issues, as the discoveries that most influence the way we think about nature seldom can be anticipated, and the same can often be said for new inventions and technologies. One thing is most clear: Seldom are such advances made by individuals alone. Rather, they result from the progress of the scientific community; asking questions, developing new technologies to answer those questions, and sharing their results and their ideas with others. However, there are indeed research strategies that can substantially increase the probability of one's making a discovery, and the speaker will illustrate some of these strategies in the context of a number of well known discoveries, including the work he did as a graduate student, for which he shared the Nobel Prize for Physics in 1996.