

## Chemistry

The Nobel Prize in Chemistry 2014 has been awarded to Eric Betzig (Janelia Farm Research Campus, Howard Hughes Medical Institute, Virginia), Stefan W. Hell (Max Planck Institute for Biophysical Chemistry, Göttingen, and German Cancer Research Center (DKFZ), Heidelberg), and W. E. Moerner (Stanford University) for their work on super-resolving fluorescence microscopy techniques. Hell was honored for his work on the stimulated emission depletion (STED) technique, and Betzig and Moerner were honored for their work on single-molecule fluorescence microscopy. Moerner and Hell, who are both on the Editorial Advisory Board of *ChemPhysChem*, recently contributed to the special issue of *ChemPhysChem* "Superresolution Imaging and Nanophotonics", which is free to read until the end of 2014. Moerner was one of the Guest Editors and discussed the use of fluorescence microscopy for measuring molecular orientation in a Minireview,<sup>[1a]</sup> and Hell published three papers, including a report on two-color RESOLFT nanoscopy that was featured on the cover.<sup>[1b]</sup>

### Nobel Prizes 2014



E. Betzig



S. W. Hell



W. E. Moerner

**Eric Betzig** studied at the California Institute of Technology and Cornell University, where he received his PhD (supervised by Michael Isaacson) in 1988. He subsequently worked at AT&T Bell Laboratories (1988–1994) and held posts in industry before he was made Group Leader at the Janelia Farm Research Campus, Howard Hughes Medical Institute, in 2005. He has reported in *Angewandte Chemie* on superresolution imaging using photoactivable xanthene dyes.<sup>[2]</sup>

**Stefan W. Hell** studied at the University of Heidelberg, where he completed his PhD under the supervision of Siegfried Hunklinger in 1990. He was a postdoctoral researcher at the European Molecular Biology Laboratory (EMBL) in Heidelberg (1991–1993), and subsequently carried out research stays at the University of Turku, Finland (1993–1996) where he developed STED microscopy, and the University of Oxford (1994). In 1996, Hell completed his habilitation at the University of Heidelberg and started a research group at the Max Planck Institute of Biophysical Chemistry, where he was made Director in 2002. He was also made Head of the Department of Optical Nanoscopy at the DKFZ in 2003. His recent report on light microscopy applications of caged rhodamine dyes was featured on the cover of *Chemistry—A European Journal*.<sup>[3]</sup>

**W. E. Moerner** studied at Washington University, St. Louis, and Cornell University, where he completed his PhD (supervised by Albert J. Sievers) in 1982. He subsequently worked at the IBM Almaden Research Center, San José, and he joined the faculty at the University of California, San

Diego, in 1995. He moved to Stanford University in 1998. His Review in *Angewandte Chemie* on the optical spectroscopy of single impurity molecules in solids was one of his first overview articles of the field.<sup>[4]</sup>

## Physiology or Medicine

The Nobel Prize in Physiology or Medicine 2014 was awarded jointly to three recipients for their discoveries of cells that constitute a positioning system in the brain. John M. O'Keefe (University College London) received one-half of the prize for his discovery of place cells in the hippocampus, and May-Britt Moser (Centre for Neural Computation, Trondheim) and Edvard I. Moser (Kavli Institute for Systems Neuroscience, Trondheim) shared the second half for their discovery of grid cells in the medial entorhinal cortex. These findings helped explain how the brain determines position and generates an internal coordinate system.

## Physics

The Nobel Prize in Physics 2014 has been awarded to Isamu Akasaki (Meijo University Nagoya, and Nagoya University), Hiroshi Amano (Nagoya University), and Shuji Nakamura (University of California, Santa Barbara) for their work on efficient blue light-emitting diodes based on gallium nitride. This discovery has led to the development of energy-efficient white light sources. Amano and Akasaki have contributed a book chapter on nonpolar Al(Ga,In)N films,<sup>[5a]</sup> and Nakamura has discussed InGaN-based blue and green LEDs and laser diodes in a Review in *Advanced Materials*.<sup>[5b]</sup>

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