

## PROFESSOR URI BANIN, CURRICULUM VITAE

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### EDUCATION:

1986-1989: The Hebrew University, Jerusalem, B.Sc. Summa Cum Laude, chemistry and physics  
1989-1994: The Hebrew University, Jerusalem, Ph.D. Summa Cum Laude, physical chemistry  
1994-1997: University of California at Berkeley, Department of Chemistry, Post Doctoral Research with Professor A. Paul Alivisatos. Topic: Physical Chemistry of Semiconductor Nanocrystals;

### EMPLOYMENT HISTORY:

2010-: Incumbent of the Alfred & Erica Larisch Memorial Chair  
2009-2015: Scientific founder and chief scientific officer of Qlight Nanotech, start-up company in Jerusalem. Qlight develops use of semiconductor nanocrystals in display and lighting applications. Qlight was fully purchased by Merck in 7/2015. Banin continues to serve as scientific advisor to the company  
2004-: Full Professor, The Hebrew University of Jerusalem  
2003-2004: Visiting professor in sabbatical stay at the University of California, Berkeley  
2001-2010: Founding director, Hebrew University Center for Nanoscience and Nanotechnology  
2001-2004: Associate Professor, The Hebrew University of Jerusalem  
1997-2001: Senior Lecturer, Alon Fellow, The Hebrew University of Jerusalem

### OTHER MAIN APPOINTMENTS:

2013-: Associate Editor, Nano Letters  
2010-: Member of the scientific advisory committee of the Italian Institute of Technology (IIT)  
2010-2011: Member of the Managing Committee of the Hebrew University  
2009: Chairman of the Scientific Committee and co-chairperson of the first international conference "Nano Israel 2009", Jerusalem, Israel  
2005-2011: Member of the Executive Committee of the Hebrew University  
2005-2008: Member of the board of directors of Yissum (tech transfer company of Hebrew Univ.)  
2002-2007: Member of the Founding Scientific Advisory Board, Nanosys Inc., Palo Alto, CA, USA  
2002: Member of the sub-committee (Maydan committee) nominated by the TELEM forum for research and development policy in Israel, on "Nanoscience and Nanotechnology in Israel"

### PRIZES & HONORS:

Kaye Innovation award (first prize) for applications of semiconductor nanorods in display and lighting applications, 2015  
First recipient of Israel Chemical Society Prize in memory of Lea Tenne for Nanoscale Sciences, 2013  
Recipient of ERC Advanced Investigator Grant, project DCENSY, 2010-2015  
Klachky award for the advancement of the frontiers of science, 2008  
Michael Bruno Memorial Award from Yad Hanadiv, 2007-2010  
Hebrew University Rector Prize for excellence in research, 2006  
Wilstaeter Lectureship awarded by the German Chemical Society, 2006  
Kaye Innovation Award for applications of semiconductor nanocrystals quantum dots in materials science and biology, 2005  
Israel Chemical Society award for young chemist, 2001  
The Hebrew University President young investigator award, named after Prof. Yoram Ben-Porat, 2000  
Yigal Alon fellowship for young faculty, 1997-2000  
Award of the Ulshwang fund, for research program of the Israel Science foundation, 1998  
Bergmann grant for young recipients of the B.S.F research grants, 1997  
Fulbright postdoctoral fellowship, 1994-1996  
Rothschild postdoctoral fellowship, 1994-1995  
Israel Chemical Society prize for graduate student, awarded by the on behalf of the Wolf prize winners Professor J. Jortner, and Professor R.D. Levine, 1993  
Intel - Dean's Graduate Student Award, 1992  
Seadia Amiel Prize for outstanding teaching, 1992  
Sara Wolf Prize for Physical Chemistry graduate students, 1991  
Golda Meir Memorial Foundation Fellow, 1989-1990  
Hebrew University Rector's prize, 1988  
Hebrew University, Faculty of Science dean's prize, 1986, 1987, 1989

## RESEARCH INTERESTS

Nanoscience and Nanotechnology, in particular the science and technology of nanocrystals. This covers the synthesis and characterization of new nanocrystals and their assemblies, with special focus on semiconductors and their combinations with other materials as well as the detailed study of their size, composition and shape dependent electronic, optical and electrical properties. The research into potential applications of the materials is also of significant interest. Banin's research philosophy takes a comprehensive approach by maintaining close contact and feedback between synthesis aspects and the related properties of the nanocrystals. Cooperative work is also closely followed, to strengthen the aspects of physical studies, theory and device integration.

### Specific research topics:

- Synthesis and properties of nanocrystals and applications in optics, energy, electronics, material science and biology
- Synthesis of novel nanocrystals with size, shape and composition control
- Optical properties, optical spectroscopy and microscopy of single nanocrystals
- Scanning probe microscopies and spectroscopies, electrical transport through nanocrystals
- Self-assembly of nanocrystals in solution and on surfaces
- Nanocrystals and solar energy harvesting, photocatalysis, photovoltaics
- Nanocrystal based opto-electronic devices including applications in displays, LEDs, lighting, nanocrystal-polymer hybrid devices & single electron transistors
- Nanocrystals as sensors and tags in biology and medicine, and for activating biological processes

## SCIENTIFIC PUBLICATIONS

Over 165 papers published in refereed journals, cited over 12000 times, h-index of 62 (ISI; Google scholar h-index of 68).

Full list available at <http://chem.ch.huji.ac.il/~nano>

### 10 Most significant publications

1. U. Banin, Y.W. Cao, D. Katz, and O. Millo, "Identification of atomic-like states in InAs nanocrystal quantum dots", *Nature* 400, 542-544 (1999).
2. N. Tessler, V. Medvedev, M. Kazes, S.H. Kan, and U. Banin, "Efficient 1.3 $\mu$ m Light Emitting Diodes Based On Polymer-Nanocrystal Nanocomposite", *Science* 295, 1506-1508 (2002).
3. S. Kan, T. Mokari, E. Rothenberg, and U. Banin, "Synthesis and properties of semiconductor quantum rods with cubic lattice", *Nature Materials* 2, 155-158 (2003).
4. T. Mokari, E. Rothenberg, I. Popov, R. Costi and U. Banin, "Selective Growth of Metal Tips Onto Semiconductor Quantum Rods and Tetrapods", *Science* 304 (5678), 1787-1790 (2004).
5. T. Mokari, C. G. Sztrum, A. Salant, E. Rabani and U. Banin, "Formation of asymmetric one-sided metal tipped semiconductor nanocrystal dots and rods", *Nature Materials* 4, 855 (2005).
6. R. Costi, A.E. Saunders, U. Banin, "Colloidal Hybrid Nanostructures: A New Type of Functional Materials", *Angewandte Chemie International Edition* 49, 4878 - 4897 (2010).
7. J.E. Macdonald, M. Bar Sadan, L. Houben, I Popov, U. Banin, "Hybrid nanoscale inorganic cages", *Nature Materials* 9, 810-815 (2010).
8. D. Mocatta, G. Cohen, J. Schattner, O. Millo, E. Rabani, U. Banin, "Heavily Doped Semiconductor Nanocrystal Quantum Dots", *Science* 332, 77-81 (2011)
9. A. Sitt, I. Hadar, and U. Banin "Band-gap engineering, optoelectronic properties and applications of colloidal heterostructured semiconductor nanorods", *Nano Today* 8, 494-513 (2013).
10. G. Jia, A. Sitt, G. B. Hitin, I. Hadar, Y. Bekenstein, Y. Amit, I. Popov, U. Banin, "Colloidal Semiconductor Nanorod Couples Via Self-Limited Assembly", *Nature Materials* 13, 301-307 (2014).

## PATENTS

Inventor and co-inventor of 26 patents in nanotechnology which are at different stages of processing. Out of these 11 granted patents. Along with the scientific impact, Banin has been active in translating the scientific discovery to industry. First, by patenting the inventions, leading to significant commercialization activity already.