

Conferencia: Functional materials: Exploiting dynamic self- assembly at interfaces

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Kingdom

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Aula de
Seminarios do
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12:15 h

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XUNTA DE GALICIA

CONSELLERÍA DE CULTURA, EDUCACIÓN
E ORDENACIÓN UNIVERSITARIA

Oren graduated from Cornell University in Ithaca, New York, with a BA in Chemistry in 1999. He completed a PhD in 2004 in olefin metathesis and controlled polymerisation, under the supervision of Professor Robert H. Grubbs at Caltech. After finishing his PhD, Oren moved to the Netherlands to work on supramolecular polymers with Professors E.W. Meijer and Rint P. Sijbesma at the Eindhoven University of Technology. In 2006, he moved to the University of Cambridge as a University Lecturer and Next Generation Fellow in the Melville Laboratory for Polymer Synthesis in the Department of Chemistry. In 2012, he was promoted to Reader in Supramolecular and Polymer Chemistry and in March 2013, he was appointed as the Director of the Melville Laboratory; Oren was promoted to Full Professor in 2015. His research focuses on dynamic supramolecular self-assembly at interfaces through the application of macrocyclic host-guest chemistry using cucurbit[n]urils in the development of novel supramolecular systems. The Scherman group exploits control over these molecular level interactions to design and fabricate soft materials with integrated function. Current research topics include microcapsules, drug-delivery systems, conservation and restoration of important historical artefacts and sensing and catalysis using self-assembled nanophotonic systems.

Professor Oren A. Scherman (DoB: 1 April 1977)

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Career

- 10/2015 – present Professor of Supramolecular and Polymer Chemistry
Melville Laboratory for Polymer Synthesis, Department of Chemistry, University of Cambridge
- 3/2013 – present Director of the Melville Laboratory for Polymer Synthesis
Department of Chemistry, University of Cambridge
- 10/2013 – 4/2015 Tsinghua Xuetang Visiting Professor in Chemistry
Department of Chemistry, Tsinghua University (Beijing, China)
- 10/2012 – 9/2015 University Reader in Supramolecular and Polymer Chemistry
Melville Laboratory for Polymer Synthesis, Department of Chemistry, University of Cambridge
- 9/2006 – 9/2012 University Lecturer in Organic and Polymer Chemistry
Melville Laboratory for Polymer Synthesis, Department of Chemistry, University of Cambridge
- 4/2004 – 9/2006 US NSF Mathematical and Physical Sciences Distinguished Research Fellow (MPS-DRF)
Postdoctoral Research Associate with Professor E.W. Meijer, Eindhoven University of Technology

Education

- 10/1999 – 2/2004 PhD, California Institute of Technology as a National Science Foundation Graduate Fellow
“*Enhancing Materials through Controlled Architectures with Ring-Opening Metathesis Polymerization*”, Supervisor: Robert H. Grubbs
- 8/1995 – 5/1999 BA in Chemistry, Cornell University (*summa cum laude*)

Publications

> 180 papers, 11 patents (granted or in process at the EPO and USPTO), 6 book chapters and 1 edited book

Research Summary

My research group is interested in dynamic supramolecular self-assembly at interfaces. Current research projects include the application of macrocyclic host-guest chemistry using cucurbit[n]urils in the development of novel supramolecular hydrogels, localised drug-delivery systems based on dynamic hydrogels, sensing and catalysis using self-assembled nanophotonic systems and the facile, one-step formation of functional microcapsules and their applications through the exploitation of supramolecular polymer chemistry. I am also a co-founder of the recent spin-out company Aqdot from Cambridge University working in the area of encapsulation.

Five Relevant Publications

- Wu, Y.; Shah, D.U.; Liu, C.; Yu, Z.Y.; Liu, J.; Ren, X.; Rowland, M.J.; Abell, C.; Ramage, M.H.; Scherman, O.A. “Bioinspired Supramolecular Fibers Drawn from a Multiphase Self-Assembled Hydrogel,” *Proc. Natl. Acad. Sci. U.S.A.*, **2017**, *114*, 8163–8168.
- Liu, J.; Tan, C.S.Y.; Yu, Z.Y.; Lan, Y.; Abell, C.; Scherman, O.A. “Biomimetic Supramolecular Polymer Networks Exhibiting both Toughness and Self-Recovery,” *Adv. Mater.*, **2017**, *29*, 1604951.
- Chikkaraddy, R.; Nijs, B.d.; Benz, F.; Barrow, S.J.; Scherman, O.A.; Rosta, E.; Demetriadou, A.; Fox, P.; Hess, O.; Baumberg, J.J. “Single-molecule strong coupling at room temperature in plasmonic nanocavities,” *Nature*, **2016**, *535*, 127–130.
- Zhang, J.; Coulston, R.J.; Jones, S.T.; Geng, J.; Abell, C.; Scherman, O.A. “One-Step Fabrication of Supramolecular Microcapsules from Microfluidic Droplets,” *Science*, **2012**, *335*, 690–694.
- Appel, E.A.; Rauwald, U.; Jones, S.; Zayed, J.M.; Scherman, O.A. “Supramolecular Crosslinked Networks via Host-guest Complexation with Cucurbit[8]uril,” *J. Am. Chem. Soc.*, **2010**, *132*, 14251–14260.

Funding

Awarded a total of 33 research grants totalling over £30M as PI or co-PI from over 12 different funding sources including industry (BP, Schlumberger, AB Vista, AWE, SABIC, Cambridge Display Technology), UK based sources (EPSRC, Leverhulme, Royal Society, The Brain Tumour Charity), International funding bodies (ERC and Weizmann-joint Research Programme). Of particular note are an ERC Starting Investigator Grant (ASPiRe, 2009) and recently a Consolidator Grant (CAM-RIG, 2016), Large Leverhulme Grant (2014) and 3 EPSRC Programme Grants (SNaP, 2009, NOtCH, 2014, RaNT 2018). I am also a co-PI and on the advisory board for two successive Doctoral Training Centres in the area of nanoscience

Prizes/awards/medals

RSC Corday Morgan Prize (2018), Covestro Lectures Cornell University (2017), Aldrich Lecture Award (2016), Ostwald Colloid and Polymer Science Lecture Award (2016, German Colloid Society), Cram Lehn Pedersen Prize in Supramolecular Chemistry (2014), Bob Hay Lecture Award (2014), RSC Hickinbottom Award (2013), SCI McBain Medal (2013), Macro Group UK Young Researchers Medal (2010), RSC Harrison-Meldola Memorial Prize (2009), Walters-Kundert Next Generation Fellowship (2006), NSF MPS-DRF International Postdoctoral Fellowship (2004), NSF Graduate Fellowship (1999), Leo and Berdie Mandelkern Prize in Chemistry (1999, Cornell University).

Invited lectureships/exchanges

Presented over 150 invited lectures including 30 Plenary/Keynote lectures at international conferences.

Organisation of meetings/conferences

Organised both national and international meetings including the 2009 RSC Supramolecular and Macrocycles Meeting (joint with Prof. Jonathan Nitschke) and the 2nd International Conference on Cucurbiturils (ICCB 2011) in June 2011 and biennial Cambridge-Warsaw symposium. Served on the local organising committee for the 2017 International Symposium on Macrocyclic & Supramolecular Chemistry (ISMSC) and organised the Chemistry Beyond the Mechanical Bond Symposium (July 2017).

Membership of advisory/executive boards and societies

I am a member of the scientific advisory boards for SABIC IP and Aqdot (2013–present), *ChemComm* editorial advisory board (2012–present), *Chem* (Cell Press) advisory board (2015–present) and international advisory board for the ICCB conference series (2009–present), executive board of UK MACRO group (2010–2013) and the executive board of RAPS (2007–2009). I am also a member of the American Chemical Society (ORGN, POLY, PMSE), the Materials Research Society and a Fellow of the Royal Society of Chemistry.

Supervision of staff/students

I have supervised **41** PhD students (**30** graduated, **13** current), **29** Postdocs (**9** current), **10** MPhil students, **25** visitors from 3–12 months (including 4 professors on sabbatical, 7 ERASMUS students, 9 visiting PhD students, 6 MPhil students).