

NICOLA A. SPALDIN

Curriculum Vitae

Materials Theory  
ETH Zürich  
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EDUCATION

Ph.D. Chemistry, University of California, Berkeley, 1996.  
B.A. Natural Sciences, First Class Honours, Cambridge University, 1991.

RESEARCH EMPLOYMENT

ETH ZÜRICH, DEPARTMENT OF MATERIALS

Professor and Chair of Materials Theory, November 2010 - present.

UNIVERSITY OF CALIFORNIA, SANTA BARBARA, MATERIALS DEPARTMENT

Professor, July 2006 - October 2010.  
Associate Professor, July 2002 - June 2006.  
Assistant Professor, August 1997 - June 2002.

UPPSALA UNIVERSITY, DEPT. OF MATERIALS PHYSICS

Visiting Professor, April - August 2010.

UC BERKELEY, DEPT. OF MATERIALS SCIENCE AND ENGINEERING

Visiting Miller Professor, January - June 2007.

CAMBRIDGE UNIVERSITY, DEPT. OF EARTH SCIENCES

Visiting Professor, March - June 2003.

JAWARHALAL NEHRU CENTRE FOR ADVANCED SCIENTIFIC RESEARCH

Visiting Professor, October - December 2000.

YALE UNIVERSITY, APPLIED PHYSICS DEPT.

Postdoctoral Researcher, April 1996 - July 1997.  
First-principles calculations for novel magnetic materials. Advisor: Prof.  
K.M. Rabe.

UNIVERSITY OF CALIFORNIA, BERKELEY, CHEMISTRY DEPT.

Graduate Student Researcher, August 1991 - March 1996.  
Ph.D. Thesis: Calculating the Electronic Properties of Semiconductor Nanostructures: A New Theoretical Approach. Advisor: Prof. K.B. Whaley.

#### CAMBRIDGE UNIVERSITY.

Undergraduate Researcher, 1991.  
Undergraduate Thesis: Study of aluminophosphate molecular sieves using magic angle spinning NMR. Advisor: Prof. J. Klinowski.

#### GENERAL ELECTRIC COMPANY, HIRST RESEARCH CENTRE

Undergraduate Intern, Aug. 1987 - Feb. 1988, Summer 1989 and 1990.  
Design of an electrically switchable Fresnel zone plate; Calculation of light transmission through twisted nematic liquid crystals; Modeling of spiral transformers for GaAs MMICs.

### ACADEMIC AWARDS

American Physical Society Outstanding Referee, 2014.  
ETH Zürich Golden Owl Award for teaching excellence, 2014.  
Fellow, American Association for the Advancement of Science, 2013.  
*For distinguished contributions to solid-state chemistry which have advanced the understanding and development of strongly-correlated materials, and for promotion of educational excellence and international activities.*  
Max Rössler Prize of the ETH, 2012.  
ERC Advanced Grant, 2012.  
Fellow, Materials Research Society, 2011.  
*For fundamental theoretical contributions leading to the emergence of the field of Multiferroics.*  
American Physical Society McGroddy Prize for New Materials, 2010.  
*For groundbreaking contributions in theory and experiment that have advanced the understanding and utility of multiferroic oxides.*  
NSF American Competitiveness and Innovation Fellow, 2009.  
*For her creative integration of fundamental science and modern computational methods for the discovery of new materials and for elucidating phenomena at the nanoscale, and her role in promoting education and international activities.*  
Fellow, American Physical Society, 2008.  
*For her development and implementation of new computational and theoretical tools for computing the properties of complex solids and their application to the rational design and understanding of new multifunctional materials, and for her profound and diverse contributions to Physics education.*  
Miller Institute Research Professorship, 2007.  
Alfred P. Sloan Foundation Research Fellowship, 2002.

UCSB Distinguished Teaching Award, 2001.  
 ONR Young Investigator Award, 2000.  
 Technology Review Magazine Young Innovator Award, 1999.  
 NSF POWRE award, 1999.  
 Regents Junior Faculty Fellowship, University of California, 1998.  
 Fulbright Scholarship from the U.S.-U.K. Fulbright Commission, 1991-1996.  
 Electronic Materials Conference Graduate Student Award, 1995.  
 Cray Research Fellowship in Computational Chemistry, 1995.  
 Materials Research Society Graduate Student Award, 1994.  
 Ephraim Weiss Fellowship, Graduate Study at U.C. Berkeley, 1993-1994.  
 Outstanding Graduate Student Instructor Awards, U.C. Berkeley, 1991 and 1992.  
 Dora Garibaldi Fellowship, Graduate study at U.C. Berkeley, 1991-1992.  
 Ronald Norrish Prize for Physical Chemistry, U. Cambridge, 1991.  
 Mineralogical Society of Great Britain Student Award, 1989.  
 Undergraduate Scholarship, GEC Hirst Research Centre, 1987-1991.  
 Royal Society of Chemistry A-level Chemistry Award, 1987.

## TEACHING EXPERIENCE

### ETH ZÜRICH

Courses presented:

*Grundlagen für Materialphysik* (5th Semester)

*Materialphysik* (6th Semester)

*Quantum-Enabled Materials* (MS)

### UNIVERSITY OF CALIFORNIA, SANTA BARBARA

Graduate education:

Director, UCSB IGERT program in Advanced Optical Materials.

Graduate Advisor, Materials Department, UCSB.

Member, Committee on status of graduate students at UCSB.

Courses presented:

*Introduction to materials; structure-property relations* (junior)

*Fundamentals of the solid state* (senior)

*Quantum mechanics* (senior)

*Introduction to electronic materials* (graduate non-majors)

*Quantum mechanics* (graduate)

*Electronic and atomic structure of materials* (graduate, core course)

*Introduction to magnetism and magnetic materials* (graduate)

*Methods of electronic structure theory* (graduate)

### UC BERKELEY

Graduate student instructor, Introductory Chemistry (freshman)  
Graduate student instructor, Advanced Statistical Physics (graduate)  
Organized and instructed teacher training for incoming graduate students  
Tutored Freshman and Organic Chemistry, U.C. Berkeley Academic Center

## RESEARCH TRAINING

## Postdoctoral scholars mentored and current positions:

Carina Faber, 2014 - present; Michael Fechner, 2011 - present; Maribel Nunez-Valdez, 2013 - 2015, Postdoctoral Researcher, U. Moscow; Uli Aschauer, 2011 - 2015, SNF Professor, U. Bern; Yu Kumugai, 2011 - 2012, Research Fellow, U. Kyoto; Andrea Scaramucci, 2011 - 2014, Postdoctoral researcher, PSI, Switzerland; Sverre Selbach, 2011 - 2012, Associate Professor, NTNU Trondheim; Eric Bousquet, 2009 - 2012, Associate Professor, U. Liege; Kris Delaney, 2006 - 2011, Researcher, UCSB; Massimiliano Stengel, 2005 - 2009, Researcher, CSIC, Barcelona; Mahdi Sargolzaei, 2007 - 2008, Associate Professor, U. Tehran; Claude Ederer, 2003 - 2006; Senior Scientist, ETHZ; Rebecca Janisch, 2003 - 2005; Professor, Ruhr Univeristy, Bochum, Germany; Stefano Sanvito, 1999 - 2001; Professor, Trinity College Dublin; Alessio Filippetti, 1999 - 2003; Associate Professor, U. Cagliari, Italy

## PhD students mentored and current positions:

Quintin Meier, 2014 - present; Florian Thöle, 2013 - present; Natalya Fedorova, 2013 - present; Boris Sangiorgio, 2013 - present; Yael Haligua, 2012 - present; Krzysztof Dymkowski, 2012 - present; Sinead Griffin, 2009 - 2014 (PhD), Postdoctoral Researcher, Molecular Foundry; James Rondinelli, 2006 - 2010 (PhD), Assistant Professor, Northwestern University; Alison Hatt, 2005 - 2010 (PhD), Science Journalist, Molecular Foundry; Pio Baettig, 2003 - 2006 (PhD), Postdoctoral researcher, SUNY Buffalo; Priya Gopal, 2001 - 2006 (PhD), Researcher, Center for Advanced Scientific Computing, U. North Texas; Gerhard Theurich, 1998 - 2001 (PhD), Scientific Programmer, NASA

## Masters projects/theses supervised:

Stefanie Tanner, 2015 (ETHZ); Sonia Brechbühl, 2015 (ETHZ); Julia Carpenter, 2015 (ETHZ); Uday Chopra, 2015 (IIT Roorkee); Jan van den Broek, 2014 (ETHZ); Hendrik Spanke, 2014 (ETHZ); Quintin Meier, 2014 (ETHZ); Matthieu Mottet, 2014 (ETHZ); Yves Blickenstorfer, 2014 (ETHZ); Damien Renggli, 2014 (ETHZ); Jens Ammann, 2013 (ETHZ); Oliver Gindele, 2013 (ETHZ); Roisin Bradell, 2013 (Trinity College, Dublin); Phuong Dao, 2012 (ETHZ); Eva Sediva, 2012 (ETHZ); Dominik Stäger, 2012 (ETHZ); Reto Pfenninger, 2012 (ETHZ); Florian Thöle, 2012 (ETHZ); Carlo Weingart, 2011 (ETHZ); Christoph Kenel, 2011 (ETHZ); Roman Engeli, 2011 (ETHZ); Philippe Hauser, 2011 (ETHZ); Joshua Sayre, 2009 - 2011 (UCSB); Kim Goto, 2001 - 2004 (UCSB); Charles Schelle, 2000 - 2003 (UCSB); Bryce Anson, 1998 - 2000 (UCSB);

## Undergraduate projects supervised:

Merlin Fierz, 2015 (ETHZ); Klara Preininger, 2014 (ETHZ); Florian Erni, 2013 (ETHZ); Christoph Murer, 2012 (ETHZ); Oliver Gindele, 2011 (ETHZ); Claire O'Brien, 2010 (Trinity College, Dublin); Sujeet Shukla, 2009 (IIT Delhi); Aaron Eidelson, 2008 (Santa Barbara High School); Sinead Griffin, 2007 (Trinity College, Dublin); Juan Martinez, 2000 (U. Puerto Rico); Arnaldo Marrero, 2000 (U. Puerto Rico); Hugh Su, 1998-1999 (UCSB)

## OTHER PROFESSIONAL ACTIVITIES

Former Director, *International Center for Materials Research*. Goals: To enable ground-breaking discoveries in materials science and engineering by facilitating international, multidisciplinary research collaborations, to provide opportunities for young researchers to develop the skills needed to excel in a global research environment and to integrate materials research experiences with an awareness of environmental and developing world issues into undergraduate curricula.

Organizer and lecturer in many Summer Schools; recently the *European School on Multiferroics*, Ascona, 2012; Bangalore Summer School on *Electronic structure methods*, 2006; International Center for Materials Research Summer School on *First-Principles Calculations for Condensed Matter and Nanoscience*, 2005; Boulder Summer School on *Frontiers of Magnetism*, 2003.

Advisory Board Memberships: APS DMP Executive committee; ABINIT electronic structure code development project; Zernike Institute, U. Groningen;  $\Psi_k$  Electronic Structure Network; Max Planck Institute for Physics and Chemistry of Solids, Dresden; Boulder Summer Schools on Frontiers in Physics.

Organizer of many technical workshops and symposia; recently *Program Chair* for the Spring 2009 MRS meeting, Complex Functional Oxides, APS meeting, 2006; the *UC/LANL Workshop on Complex Functional Oxides*, UCSB, 2005; *Chemical Control of Oxide Materials Response*, ACS meeting, 2005; *Multiferroics*, MRS Fall meeting, 2005.

Member of Agilent Technologies Expedition to install solar powered refrigerators in remote medical centers in Nepal. Worked with local High School teachers to develop and teach classes on Physics of Photovoltaics.

Commissioned and premiered symphony on the Chemistry of Fireworks; developed accompanying lectures with the composer to enhance the concert-going public's appreciation of chemistry.