

PERSONAL INFORMATION

Family name, First name: Stellacci, Francesco

Nationality: Italian

Date of birth: 22-03-1973

URL for web site: <http://sunmil.epfl.ch>

Researcher unique identifiers: Research ID B-1990-2008, ORCID: 0000-0003-4635-6080

CURRENT POSITIONS

2010 – Full Professor, Constellium Chair, Institute of Materials, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland

2013 – Full Professor, Interfaculty Biotechnology Institute, EPFL, Switzerland

2014 – Director, “Integrative Food and Nutrition Center”, EPFL, Switzerland

EDUCATION

1998 Laurea Materials Engineering, Politecnico di Milano, Italy

PROFESSIONAL AND ACADEMIC EXPERIENCE

1999 – 2002 Postdoctoral Scholar, Chemistry Department, University of Arizona, Tucson, USA

2002 – 2006 Assistant Professor, Department of Materials Science and Engineering (DMSE), MIT, USA

2006 – 2009 Associate Professor without tenure, DMSE, MIT, USA

2009 – 2010 Associate Professor with tenure, DMSE, MIT, Cambridge, USA

2006 – 2009 Adjunct Professor, Department of Chemical Engineering, Korean Advanced Institute of Science and Technology KAIST, Korea

2010 – 2014 Adjunct Professor, DMSE, MIT, USA

2010 – 2016 Adjunct Investigator, Nanomedicine Group, Istituto Neurologico “Besta”, Milan, Italy

2014 – 2015 Adjunct Professor, Chemistry Dept., Harbin Institute of Technology, Harbin, China

RESEARCH PROJECT AS LEADING INVESTIGATOR

Current projects as leading investigator are: SNF regular grant “Patchy Particles and Surfaces” Sinergia. The PI is also involved in 2 NCCR projects and 3 EU projects, none has overlap with the proposed grant.

SUPERVISED PHD THESES AND IMPORTANT CONTRIBUTION TO CAREER OF SCIENTISTS

(Underlined names are active in academic research, asterisk active in industrial research, **bold** faculty members, *italics* will have left the group at time of evaluation) **PhD**: A. Jackson, R.B. Barsotti*, G. DeVries, A. Yu*, T.M. Yu, B. Wunsch*, **O. Bakr**, J. Kuna*, J-Y. Kim, O. Akbulut, H. Kim, **E.-S. Kim**, R. Carney, M. Ricci*, M. Pelliccia*, M. D’Alicarnasso, P. Jacob Silva, S. Allegri, M. Mueller, E. Anatosopoulou, E. Ertem, N. Nianias*, Z. Luo, A. Bekdemir, P. Guven*, O. Kocabiyik; **POST-DOCS**: M. Brunnbauer*, B. Long, X. Liu, C. Dubois, Y. Yu, X. Liu*, **K. Nakata**, **Y. Tang**, **M. Yu**, J. Reguera, A. Centrone, **K. Voitchovski**, **S. Guldin**, A. Verma, O. Uzun, M. Moglianetti, M. Mameli*, **S. Jones**, H. Yang, L.-A. Halim, B. Le Quay, P. Andreozzi, E.-R. Janecek*, M. Janecek, P. Zaleke, **B. Kaliginedi**.

SENIOR SCIENTISTS: **S. Krol**

FELLOWSHIPS AND AWARDS

2004 MIT, Dept. of Mat. Sci. and Eng., Graduate Materials Council, “Outstanding Graduate Teaching Award”

2004 MIT, School of Engineering, “Finmeccanica Career Development Chair”

2004 3M, “Untenured Faculty Award”

2005 DuPont, “Young Professor Award”

2005 Technology Review, “Top 35 Innovators Under 35”

2005 3M, “Innovation Award”

2006 Hewlett Packard Foundation, “Fellow”

2007 US National Science Foundation (NSF), “CAREER award”

2007 MIT, School of Engineering, “Junior Bose Award for Excellence in Teaching”

- 2007 NASA, “Nanotech Briefs Nano 50(tm) Award Winners”
- 2008 MIT, School of Engineering, “Paul M. Cook Career Development Chair”
- 2008 *Popular Science* Magazine, “Brilliant Ten Award”
- 2011 Chinese Academy of Science, “China Nano, Plenary Speaker Award”
- 2012 European Materials Research Society (E-MRS), “EU40 Award” (top Materials Scientist under 40, shared)
- 2013 Royal Society of Chemistry (RSC), “Fellow”
- 2014 Global Young Academy, “Fellow”
- 2016 Leenards Foundation Prize
- 2017 European Academy of Sciences, “Fellow”
- 2018 Northwestern Polytechnic Institute, China, “Consultant Professor”
- 2019 Italian Chemical Society, “Medaglia Prof. Modena”
- 2019 Academia Europaea, “Member”

TEACHING ACTIVITIES

- 2003 – 2009 Nanoscale Materials, Department of Mat. Sci. and Eng., MIT, USA
- 2003 – 2007 Experiments in Materials Science, Department of Mat. Sci. and Eng., MIT
- 2007 – 2010 Materials Structure, Department of Mat. Sci. and Eng., MIT
- 2011 – 2015 Surfaces and Interfaces, Institute of Materials, EPFL, Switzerland
- 2011 – Thermodynamics for Materials Science, Institute of Materials, EPFL
- 2015 – Co- Instructor – Statistical Mechanics, Institute of Materials, EPFL

INSTITUTIONAL RESPONSIBILITIES

- 2004 – 2010 Member of Graduate Student Admission Committee, DMSE, MIT
- 2006 – 2009 Member of a four Faculty Search Committees, DMSE, MIT
- 2011 – Member of many Faculty Search Committees, Institute of Materials, EPFL
- 2011 – Member of the Graduate Committee, Institute of Materials, EPFL
- 2011 – Tenure Mentor for six young Faculty Members, EPFL
- 2014 – Director, “Integrative Food and Nutrition Center”, EPFL

EXTERNAL ACTIVITIES

- 2006 –2012 Chairman, Scientific Advisory Board, Molecular Stamping
- 2006 –2009 North American Editor, “Journal of Experimental Nanoscience”
- 2006 – Member of the Editorial Board, “NanoToday”
- 2008 – Member of the Editorial Advisory Board, “Small”
- 2008 –2013 Associate Editor, “Journal of Nanoparticle Research”
- 2008 Co-editor, special issue on “Frontiers in Nanoparticle Research” in “Advanced Materials”
- 2009 – 2018 Editor “Nanoscale”
- 2010 – 2016 Editorial Board Member, “Nature Communications”
- 2011 – 2013 Member, Scientific Advisory Board, Veneto Nanotech, Banca Cariparo, Italy
- 2011 – Visiting Committee Member, Department of Materials Engineering, Politecnico di Milano
- 2013 – 2016 Member, Scientific Advisory Board, “Centro Europeo di Nanomedicina” , Italy
- 2014 – 2016 Chairman of the Scientific Advisory Board “Midatech”
- 2014 – 2018 External member of the Interdisciplinary Research (FAID) Panel of the Swiss National Science Foundation
- 2014 – Member of the ERC PE5 Consolidator Grant Panel
- 2016 – Member of the Editorial Advisory Board, “Langmuir”
- 2016 – Member of the Flavor Advisory Board, “Firmenich”

**MAJOR SCIENTIFIC ACHIEVEMENTS
FRANCESCO STELLACCI**

Some of the main accomplishments in Prof. Stellacci's career are listed below:

Prof. Stellacci has been the first one to address the problem of molecular organization for self-assembled monolayers on gold nanoparticles. This question has led to the discovery of patchy stripe-like domains on gold nanoparticles (Jackson et al. *Nature Materials* 2004) and the explanation of such phenomenon as a result of interfacial conformation entropy (Singh et al. *Physical Review Letters*, 2006). His group has been able to show that such unique organization has specific effects on the properties of the nanoparticles. In particular there are distinct effects on the interfacial energy (Centrone et al. *PNAS* 2008, Kuna et al. *Nature Materials* 2009). Guided by these discoveries in the fundamental properties of nanoparticles and interfaces, his group has looked in depths at the interaction of these nanoparticles with biological materials. They have been the first ones in the world to discover that some particles could cross the cellular membranes with an energy independent mechanism (Verma et al. *Nature Materials* 2008, Web of Science Highly Cited paper). Such discovery has been investigated in depth and a mechanism has been proposed (Van Lehn, *Nano Letters* 2013, Van Lehn, *Nature Communication*, 2014). Currently there have been at least two symposia organized (not by anybody associated with Stellacci) on this topic alone. Another achievement of Prof. Stellacci has been that of showing that –by combining absorbant materials with superhydrophobic materials- it is possible to obtain a new class of materials that can efficiently remove oil from water (Yuan et al. *Nature Nanotechnology* 2008, Web of Science Highly Cited Paper). This has started a whole field on the topic. In a way directly related to Stellacci's research, ENI (Italian Oil Company) has developed a device that without any energetic needs, can re-adsorb oil spilled or already present in water wells close to oil pumps. They are in the process of launching a tender for the fabrication of such device. Also, multiple research efforts (and at least one start-up) in China and India have arisen based on concepts clearly inspired by the original publication.

Finally, recently Prof. Stellacci has been able to develop a theory about the stabilization for viral vectors against thermal instabilities. This theory has led to the development of three classes of stabilizers for viral vectors to be used as vaccines. The final result has been the stabilization of a test vaccine (against Chikunguya virus) for 2 weeks at room temperature (Pelliccia et al. *Nature Communications* 2016). Prof. Stellacci has chosen not to patent this discovery for a humanitarian choice, given the impact of this discovery on the cold chain problem.

In 2006 Prof. Stellacci co-Founded a start-up company called "TwoF" and its fully owned associated "Molecular Stamping" the company produced DNA microarrays for the early detection of acute bacterial infections (Sepsis). The company went through three rounds of funding but eventually closed due to the advent of sequencing.

During his post-doctoral work Prof. Stellacci discovered a method for the two-photon fabrication of metallic structures within a polymeric matrix. This method was patented and eventually licensed to 3M, the patent currently produces royalties.

Prof. Stellacci is a member of a few societies and a Fellow of the Global Young Academy, the Royal Society of Chemistry, and the European Academy of Sciences, and of Academia Europaea.