






Filippo Federici Canova

Curriculum vitae

 Born 4 July 1983
 Italian nationality
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EDUCATION

2008 – 2012 **Ph.D. Computational Physics**
*Tampere University of Technology,
Tampere, Finland*

2006 – 2008 **M.Sc. Experimental Physics**
*Università Cattolica Sacro Cuore,
Brescia, Italy*

2004 – 2006 **B.Sc. Physics**
*Università Cattolica Sacro Cuore,
Brescia, Italy*

WORK EXPERIENCE

FEBRUARY 2015 – PRESENT

Espoo, Finland
Aalto University Aalto science fellow position.
Research project on Machine learning strategies for
optimising materials.

OCTOBER 2012 – JANUARY 2015

Sendai, Japan
Tohoku University
In the Advanced Institute for Materials Research, I
have been working as Associate Researcher, on the
simulation of atomic scale frictional and lubrication
mechanisms in nanoconfined fluids.

JANUARY 2009 – SEPTEMBER 2012

Tampere, Finland
Tampere University of Technology
In Tampere I completed the Ph.D. degree and car-
ried out several research projects, most of which re-
quired the development of novel simulation methods
and analysis tools.

SEPTEMBER 2008 – DECEMBER 2008

Espoo, Finland
Helsinki University of Technology
I started Ph.D. studies under the supervision of Prof.
Adam Foster in Helsinki University of Technology.
There I studied and practised electronic structure
simulation techniques, and numerical methods to
simulate atomic force microscopy.

KNOWLEDGE

Scientific

EXPERIMENTAL Ultra-high vacuum systems,
X-Ray photoemission
spectroscopy, atomic force
microscopy, basic electronics

COMPUTATIONAL Molecular dynamics, ab-initio
simulations, monte carlo and
finite elements methods,
mechanical models, image
recognition, neural networks,
genetic algorithms

Programming

ADVANCED FORTRAN, C, C++, C#, CUDA,
MPI, Visual Basic, Python,
Bash/C shells, Unity

INTERMEDIATE CG, Comsol Multiphysics,
LabVIEW, L^AT_EX, Cinema 4D,
linux, Windows

BASIC HTML, CSS, JavaScript

GRANTS AND AWARDS

2012–2014 Tampere University of Technology,
Doctoral Scholarship

2012 Poster Award at MRS spring
meeting

2011 Finnish Academy of Science and
Letters, Research grant

2010 Finnish Academy of Science and
Letters, Research grant

LANGUAGE SKILLS

ITALIAN Native speaker

ENGLISH Excellent - TOEFL 106/120

JAPANESE Basic

HOBBIES

Videogame programming, 3D modelling and animat-
ing, baking, piano

PUBLICATIONS

- L. Sangaletti, F. Federici Canova, A. Sepe, S. Pagliara, M.C. Mozzati, P. Galinetto, C.B. Azzoni, A. Speghini and M. Bettinelli
1. *Magnetism and stability of the Co:TiO₂(1 0 0) interface probed by X-ray photoemission and ex situ magnetometry*
Surface Science, **608**, 4375 (2007)
 2. *Magnetic polaron percolation on a rutile lattice: A geometrical exploration in the limit of low density of magnetic impurities*
Physical Review B, **80**, 033201 (2009)
 3. *G. Drera, F. Banfi, F. Federici Canova, P. Borghetti, L. Sangaletti, F. Bondino, E. Magnano, J. Huijben, M. Huijben, G. Rijnders, D. H. A. Blank, H. Hilgenkamp, and A. Brinkman*
Spectroscopic evidence of in-gap states at the SrTiO₃/LaAlO₃ ultrathin interfaces
Applied Physics Letters, **98**, 052907 (2011)
 4. *F. Federici Canova and A. S. Foster*
The role of the tip in non-contact atomic force microscopy dissipation images of ionic surfaces
Nanotechnology, **22**, 045702 (2011)
 5. *M. K. Rasmussen, A. S. Foster, B. Hinnemann, F. Federici Canova, S. Helveg, K. Meinander, N. M. Martin, Jan Knudsen, A. Vlad, E. Lundgren, A. Stierle, F. Besenbacher and J. V. Lauritsen*
Stable Cation Inversion at the MgAl₂O₄(100) Surface
Physical Review Letters, **107**, 036102 (2011)
 6. *M. K. Rasmussen, A. S. Foster, F. Federici Canova, B. Hinnemann, S. Helveg, K. Meinander, F. Besenbacher and J. V. Lauritsen*
Noncontact atomic force microscopy imaging of atomic structure and cation defects of the polar MgAl₂O₄(100) surface: Experiments and first-principles simulations
Physical Review B, **84**, 235419 (2011)
 7. *S. Kawai, F. Federici Canova, Th. Glatzel, Adam S. Foster and Ernst Meyer*
Atomic-scale dissipation processes in dynamic force spectroscopy
Physical Review B, **84**, 115415 (2011)
 8. *F. Federici Canova, A. S. Foster, M. K. Rasmussen, F. Besenbacher and J. V. Lauritsen*
Non-contact atomic force microscopy study of hydroxyl groups on the spinel MgAl₂O₄(100) surface
Nanotechnology, **23**, 325703 (2012)
 9. *S. Kawai, F. Federici Canova, Th. Glatzel, T. Hynninen, E. Meyer and A. S. Foster*
Measuring electronic field induced sub-picometer displacement of step edge ions
Physical Review Letters, **109**, 146101 (2012)
 10. *F. Federici Canova, S. Kawai, Ch. De Capitani, K. Kan'no, Th. Glatzel, B. Such, A. S. Foster and E. Meyer*
Measuring electronic field induced sub-picometer displacement of step edge ions
Physical Review Letters, **110**, 203203 (2013)
 11. *A. Harju, T. Siro, F. Federici Canova, S. Hakala and T. Rantalaiho*
Computational Physics on Graphics Processing Units
Applied Parallel and Scientific Computing - Springer Berlin Heidelberg (2013)
 12. *F. Federici Canova, S. Kawai, C. de Capitani, K. Kanno, Th. Glatzel, B. Such, A. S. Foster, and E. Meyer*
Energy Loss Triggered by Atomic-Scale Lateral Force
Physical Review Letters, **110**, 203203 (2013)
 13. *D. M. Packwood, K. T. Reaves, F. Federici Canova, H. G. Katzgraber and W. Teizer*
Two-dimensional molecular magnets with weak topological invariant magnetic moments: mathematical prediction of targets for chemical synthesis
Proceedings of The Royal Society A, **469**, 2160 (2013)

PUBLICATIONS

- F. Federici Canova, H. Matsubara, M. Mizukami, K. Kurihara and A. L. Shluger
14. *Shear dynamics of nanoconfined ionic liquids*
Physical Chemistry Chemical Physics, **16**, 8247 (2014)
- D. Z. Gao, J. Grenz, M. B. Watkins, F. Federici Canova, A. Schwartz, R. Wiesendanger and A. L. Shluger
15. *Using Metallic Noncontact Atomic Force Microscope Tips for Imaging Insulators and Polar Molecules: Tip Characterization and Imaging Mechanisms*
ACS Nano, **8**, 5339 (2014)
- S. Kawai, A. S. Foster, F. Federici Canova, H. Onodera, S. Kitamura and E. Meyer
16. *Atom manipulation on an insulating surface at room temperature*
Nature Communications, **5**, 4403 (2014)
- P. Han, K. Akagi, F. Federici Canova, H. Mutoh, S. Shiraki, K. Iwaya, P. S. Weiss, N. Asao, and T. Hitosugi
17. *Bottom-Up Graphene-Nanoribbon Fabrication Reveals Chiral Edges and Enantioselectivity*
ACS Nano, **8**, 9181 (2014)
- A. Amrous, F. Bocquet, L. Nony, F. Para, Ch. Loppacher, S. Lamare, F. Palmino, F. Cherioux, D. Z. Gao, F. Federici Canova, M. B. Watkins, and A. L. Shluger
18. *Molecular Design and Control Over the Morphology of Self-Assembled Films on Ionic Substrates*
Advanced Materials Interfaces, **1**, (2014)