

Education & Training

Prof. Anna Franchini, born in Modena October 6, 1957, got the degree in Physics with summa cum laude at the University of Modena June 26, 1981, discussing an original thesis with title "Teoria della Dinamica Reticolare di Superficie dei Metalli di Transizione". In the period from 1st November 1983 and October 31st 1986 she was PhD student at the University Consortium Modena - Parma and she got PhD in Physics in 1987 discussing an original dissertation with title "Teoria della diffusione elastica ed anelastica di atomi neutri e dinamica reticolare di superficie".

Job experience and present position

From 1st August 1990 to 31st October 1999 she was Researcher at the University of Modena in the disciplinary group B03X. Since 1st November 1999 she is Associate Professor of the group of General Physics (moved to SSD FIS / 01, now PHYS-03/A) at the University of Modena and Reggio Emilia.

Organizing job

She was a member of the Teaching Body of the Doctoral School in Physics and Nanosciences of the University of Modena and Reggio Emilia until 2012. From the academic year 2000/01 to the 2007/08 she was the referent for the Degree Course in Physics and actively collaborated with the president of the degree course council in the management of the degree course. From a.y.2008/09 for the three-year period 2008/09 - 2009/10 - 2010/11 she has been President of the Interclass Council of Physics, extended until the establishment of the Department of Physical, Computer and Mathematical Sciences (FIM) and then confirmed Coordinator of the Bachelor's Degree in Physics until 31/10/2021. Since November 2021 she is the Quality Manager of the FIM Department and Deputy Director of the FIM Department.

Research Experience

She was working in the subsequent fields:

- ✓ Surface lattice dynamics of noble and transition metals
- ✓ Classical Molecular Dynamics
- ✓ Inelastic Scattering of low energy electrons
- ✓ Elastic and inelastic scattering of neutral atoms from noble, simple and transition metal surfaces
- ✓ Surface reconstruction of metals
- ✓ Interaction potential between neutral atoms and metal surfaces
- ✓ Theory of Debye-Waller factor for interaction of neutral atoms and metal surfaces
- ✓ Theory of desorption and adsorption of rare gases on metals
- ✓ Anharmonicity in solids: bulk and surface phonon lifetime and energy shift
- ✓ Intrinsic effects of anharmonicity: solitonic modes in continuous and discrete elastic media and in magnetic systems
- ✓ First principle calculations of structural and vibrational bulk properties of alkali metals
- ✓ Study of nanofriction using simple models, Frenkel-Kontorova like
- ✓ Study of nanofriction using 3D Molecular Dynamics simulations
- ✓ DFT calculations of electronic and structural properties of stepped surfaces of semiconductors
- ✓ DFT calculations of electronic properties of defects in solids

She went to many international and national meetings, giving talks, and she is author of

about 80 papers published in the main international and national physics reviews.

Other information

She was the local coordinator of two national research projects COFIN/PRIN in 1999 (Study of anharmonic properties of the metallic surfaces at high temperature) and in 2001 (Atom-surface scattering and anharmonic properties of atoms, molecules and monolayers on metals).

She participated to other COFIN/PRIN projects in 1997, 2003, 2004 e 2006, to the 3 years project PRA/2001 "Nanorub" of INFN and to the 2 years NATO/Collaborative Linkage Grant 2003/04 "microscopic friction: from simple models to real systems".

She participated

- ✓ to the Computational Project Trial "tryMagri" from 7/03/2014 to 7/06/2014 – 10000 hours on FERMI,
- ✓ to the Computational Project IscraC "IATON" from 29/01/2015 to 29/10/2015 - 150000 hours on FERMI,
- ✓ to the Computational Project IscraB "UNDEFEAT" from 28/10/2015 to 28/10/2016 – 1600000 hours on FERMI and MARCONI,
- ✓ to the Computational Project IscraC "BILLY" from 15/02/2017 to 15/11/2017 – 60000 hours on MARCON1,
- ✓ to the Computational Project IscraC "RPIOS" from 13/13/2017 to 13/9/2018 – 35000 hours on MARCON2.

She has been the principal investigator of the to the Computational Project IscraC "STEPS" on the Structure and electronic properties of surface steps on reconstructed semiconductor surfaces from 25/05/2014 to 25/05/2015 – 80000 hours on GALILEO.

She has been the principal investigator of the to the Computational Project IscraC "ELETTO" on the ELastic intEracTions between sTeps on a recOnstructed GaAs(001) surface from ab-initio calculations – from 5 /08/2015 to 5/05/2016 – 1000000 hours on FERMI.

She has been the principal investigator of the to the Computational Project IscraC "EVARISTO" on the OxygEn VAcancy and Reductlon STate Of cerium at the Ag/ceria interfaces – from 9/8/2017 to 9/5/2018 – 17500 hours on MARCON2.

She has been the principal investigator of the to the Computational Project IscraC "CALIB" relativo a "Many-body interactions in NMC CAthode materials for the next-generation Li Ion Batteries" – from 18 Agosto 2020 to 18 Maggio 2021 – on M100 – budget 30000.

(update June 2024)