

INFORMAZIONI PERSONALI

Carla Andreani



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F.C. NDRCRL54D45H501J

Sex F | **Date of birth** 5th April, 1954 | **Nationality** Italian

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GENERAL INFORMATION

CURRENT POSITION **Full Professor of Applied Physics**
Full time employment. Permanent contract.

EDUCATION

21st November 1977 **Laurea Summa cum Laude in Physics**
University of Rome La Sapienza (MSc 1977).
Thesis "Missing mass in the universe and Black Holes" Relatore Professor Remo Ruffini.

ACADEMIC POSITIONS

2021-present Member of the STFC Science Board (Science Technology Facility Council-UK)
Dal 2015 Professor of Applied Physics, Department of Physics, Chair Condensed Matter, University of Rome Tor Vergata
Dal 2012 Director of the International Erice School "*Neutron Science and Instrumentation*", Ettore Majorana Foundation and Centre for Scientific Culture
2015-2019 Member of the "*Neutron Technology Advisory Committee (NTAC)* for the "*Chinese Spallation Neutron Source (CSNS)*", Dongguan, Guangdong (China) nominated by *Chinese Academy of Science*
2013-2019 Deputy Rector for Research Infrastructures, University of Rome Tor Vergata.
2012 Visiting Professor University of Hong Kong Sun Yat-Sen University (Guangzhou, China) and Institute of Crystal Materials of Shandong University (Jinnan, China)
2010 Visiting Professor at Sun Yat-Sen University and Shandong University Institute of Crystal Materials and Tsinghua University (Beijing, China) (China)
2007-2015 Professor in Condensed Matter, Dep. Physics, University of Rome Tor Vergata
1998- 2007 Associate Professor in Condensed Matter, Dep. Physics, University of Rome Tor Vergata
Member of the Physics Committee of National Research Council, in which she served in the role of scientific secretary
1994-1998 Researcher, Dep. Physics, University of Rome Tor Vergata
1984-1998 Visiting Scientist at the ISIS Spallation Neutron Source (UK), CNR fellowship
1984 Visiting Scientist at IPNS (Intense Pulsed Neutron Source) Argonne National Lab (IL, USA), CNR-NATO Fellow
1983-1984 Researcher, serving as Material Scientist, at ENEA Research Centre (IT)
1981-1983 Visiting Scientist at LINAC Harwell, A.E.R.E. Harwell (Oxfordshire, UK), CNR-NATO Fellow,
1980-1981 Post Doc Fellow, Fondazione Bordini (IT)

MANAGEMENT

2016- 2019 Member of the Governing Board of the Consortium COIRICH (Distributed Research Infrastructure for cultural heritage diagnostics).
2015-2020 Member of the Governing Board of the Research Institute "Museo Storico della Fisica e Centro Studi e Ricerche "Enrico Fermi" (IT)
2013-2019 Director NAST Centre (Nanoscience, Nanotechnology, Instrumentation), University of Rome Tor Vergata
2011-2015 Chairperson of Scientific and Technical Committee COIRICH
2010-2014 Member of the Governing Board of SVILUPPO CULTURA s.r.l., appointed by the University of Rome Tor Vergata, spin off company financed by Italian Ministry for University and Research dal MIUR
2005-2008 Member of the Governing Board of the University of Rome Tor Vergata
1999-2014 Director of the Journal NOTIZIARIO NEUTRONI E LUCE DI SINCROTRONE

SCIENTIFIC ADVISOR

since 2019 Evaluator (Esperto Tecnico Scientifico) for Research Infrastructure project for the Italian Ministry of University and Research

- since 2015 Member of the National Research Council Scientific Advisory Committee for Italian in-kind contribution to the European Spallation Source
- Dal 2012 Member of the Program Committee of UCANS-Union of Union for Compact Accelerator-driven Neutron Sources (UCANS), <http://www.ucans.org>
- Dal 1985 Spokesperson for CNR within the international agreement CNR-STFC, to coordinate the Italian neutron scattering program at ISIS (UK)
- 2019 Author of *NEUTRON SCIENCE AND FACILITIES – “A Strategic Review and Future Vision for Neutron Science in Italy. Report of the Advisory Panel*
- 2011 Delegate of CNR president and coordinator of the workshop ESS Italy (www.ess-italia.it), kick off for the preparatory phase di ESS (European Spallation Source) in Italy
- 2011 Coordinator of “ESS Italia” (www.ess-italia.it) for italian activities in the preparatory phase of ESS (European Spallation Source)
- 2010-2011 Member of the “Tavolo di Concertazione” MIBAC-MIUR
- 2009-2011 Chairperson of the “Panel for the Physical Science” of CNR
- 2009-2010 Delegate of CNR president and coordinator of the workshop ESS Italy (www.ess-italia.it), kick off for the preparatory phase di ESS (European Spallation Source) in Italy
- 2008-2010 Member of the "International Advisory Board" of ESS Bilbao
- 2005-2007 Member of the *Novel Instrumentation Think Tank*, Oak Ridge National Laboratory (ORNL) (USA)
- 1994-2015 Membro della Commissione di coordinamento per la Spettroscopia di Neutroni e di Luce di Sincrotrone del CNR
- 1994-2012 Delegate of the CNR president within the European Union Round Table on Neutron Sources (NMI3) (FP3-FP7)
- 1996-1999 Member of the NEUTRON SOURCES WORKING GROUP (OECD MEGASCIENCE FORUM) Panel B: International cooperation in the development of neutron instrumentation and data evaluation

AWARDS

- 2016 *Occhialini Medal and Prize*, jointly awarded by the **Institute of Physics- (IOP-UK)** and Società Italiana di Fisica (SIF) – Citation: *“For her outstanding contributions to novel experimental techniques and methods in neutron spectroscopy and her tireless commitment to fostering the British-Italian collaboration in neutron science”* <https://www.isis.stfc.ac.uk/Pages/ISIS-user-Prof-Carla-Andreani-wins-prestigious-award.aspx>
- 2016 Award 100 Eccellenze Italiane 2016
- 2011 Elected **Fellow of the Institute of Physics** (FInstP) (UK), Citation: *“In recognition of personal contribution to the advancement of physics as a discipline and a profession”*

PROFESSIONAL MEMBERSHIPS

Institute of Physics (IOP)
Società Italiana di Fisica (SIF)
European Physical Society (EPS)
American Chemical Society
School of Neutron Scattering "Francesco Paolo Ricci" (SoNS)

TEACHING AND EDUCATIONAL ACTIVITIES

- since 2010 Member of the Teaching Committee of the Ph.D School in Materials for Health, Environment and Energy, University of Rome Tor Vergata
- since 2010 Neutron Physics and Applications, Ph.D School in Materials for Health, Environment and Energy, University of Rome Tor Vergata
- 2004-2008 Member of the Teaching Committee of the Ph.D School "Nanostructures and Nanotechnologies", University Milano-Bicocca
- 2011-2007 Member of the Teaching Committee of the Ph. D School in Physics, University of Rome Tor Vergata

2000-2001 Member of the Teaching Committee of the Department of Physics, University of Rome Tor Vergata established for the planning of undergraduate degrees.

From the a.a. 1993/1994 to date CA has been Professor of the following courses:

- a.a. 2010/2001, 2011/2012 2012/2013, 2013/2014, 2014/2015, 2015/2016, 2016/2017, 2017/2018, 2018/2019, 2019/2020 Neutron Physics and its applications, Degree in Physics Fisica and Ph School in *Materials for Health and Environment and Energy*
- a.a. 2008/2009, 2009/2010, 2010/2001, 2011/2012 2012/2013, 2013/2014, 2014/2015, 2015/2016, 2016/2017, 2017/2018, 2018/2019, 2019/2020 Physics, Degree in Biotechnologies, University of Rome Tor Vergata
- a.a. 2007/2008, 2008/2009 Spectroscopy, Master and Ph D School in Physics, University of Rome Tor Vergata
- a.a. 2004/2005, 2005/2006, 2006/2007, 2007/2008, 2008/2009, 2009/2010, 2009/2010, 2010/2011, 2011/2012 Material Science and investigation through neutron spectroscopy, Ph.D School "Nanostructures and Nanotechnologies", University Milano-Bicocca
- a.a. 1999/2000, 2000/2001, 2001/2002, 2002/2003 Instrumentation and Neutron Scattering Techniques, e Teoria dello Scattering di Neutroni, Ph D School in Physics, University of Rome Tor Vergata
- a.a. 2000/2001 e 1998/1999 Crystallography, Degree in Material Science, University of Rome Tor Vergata
- a.a. 2002/2003, 2003/2004, 2004/2005, 2005/2006, 2006/2007, 2007/2008 Physics, Degree in Biotechnologies, University of Rome Tor Vergata
- a.a. 1999/2000, 2000/2001, 2001/2002, 2002/2003, 2003/2004, 2004/2005, 2005/2006, 2006/2007 Spectroscopy, Degree in Physics, University of Rome Tor Vergata
- a.a. 1988/1999 Solid State Spectroscopy, Degree in Physics, University of Rome Tor Vergata
- a.a. 1994/1995, 1995/1996, 1996/1997, 1999/2000 Physics, Degree in Biology, University of Rome Tor Vergata
- a.a. 1993/1994 General Physics I, Degree in Physics, University of Rome Tor Vergata

From the a.a. 1985/1986 she has collaborated to the following courses

- a.a. 1985/1986 Physics, Degree in Biology, University of Rome Tor Vergata
- a.a. 1986/1987 Struttura della Materia, Degree in Physics, University of Rome Tor Vergata
- a.a. 1987/1988 1988/1889, 1996/1997 Physics, Degree in Biology, University of Rome Tor Vergata
- a.a. 1987/1988, 1988/1889, 1989/1990 General Physics II, Degree in Mathematics, University of Rome Tor Vergata
- a.a. 1990/1991, 1992/1993, 1994/1995 General Physics I, Degree in Physics, University of Rome Tor Vergata
- a.a. 1991/1992, 1993/1994, 1995/1996, 1997/1998 General Physics II, Degree in Physics, University of Rome Tor Vergata

Maternity leave March-September 1987 and September 1989-march 1990

**FURTHER TEACHING,
DISSEMINATION AND
SUPERVISION ACTIVITIES**

Tutor of over 23 Ph D students, either as advisor or co-advisor for the University of Rome Tor Vergata, Roma Tre, Milano-Bicocca, University-College-London (UK), ISIS (UK) and CNR. Host of numerous visiting professors and scientists.

Several of her former students are professors or researchers in national and international universities and research institutions.

Over 230 invited seminars or colloquia for Ph D students or national and international schools in Universities, research centres and industries in Italy, Belgium, China, Denmark, France, Spain, Sweden, Germany, Norway, Poland, Czech Republic,

Switzerland , Honk Kong, Singapore, Hungary, UK, USA.

Organizer or co-organizer of over 60 national or international conferences, workshop, and schools

I organised and directed the following workshops: “Cultural heritage and advanced technologies Symposium” (Novembre 2014), Italian Embassy London; “Understanding and fighting Dementia: an Italy-Uk Symposium” (Novembre 2016), Villa Wolkonsky British Embassy Rome - Bio&Medical Science with new light Sources (Marzo 2009) Villa Wolkonsky British Embassy Rome, “High Energy Neutrons for Science and Society” (Ottobre 2010) Villa Wolkonsky British Embassy Rome, “Industrial applications light and neutron sources ELI and ISIS”, (Roma 2013) Villa Wolkonsky British Embassy Rome, “Italy – UK Partnership in Neutron Science: Thirty Years and Beyond (Novembre 2015) Villa Wolkonsky British Embassy Rome.

REVIEW AND EVALUATION ACTIVITIES

	Peer Reviewer for several International Journals: American Chemical Society: Journal of Physical Chemistry; American Physical Society: Physical Review, Physical Review Letters; Europhysics Letters, Journal Of Chemical Physics, Institute of Physics, ISRN Condensed Matter Physics., Meas. Sci. Technology, Molecular Physics, Nature, Nature Materials, Nature Communications, Nuclear Instrument and Methods
since 2019	Scientific Advisor (Esperto Tecnico Scientifico ETS nominated <i>n. 1242 del 21-06-2019 e n. 1245 del 21-06-2019</i>) for Research Infrastructure projects “SHINE - Potenziamento dei Nodi Italiani in E-RIHS” (PIR01_00016); “PRO-ICOS_MED - Potenziamento della Rete di Osservazione ICOS-Italia nel Mediterraneo” (codice PIR01_00019), Azione <i>II.1 del PON Ricerca e Innovazione 2014-2020</i> , D.M. 999/2017, financed within D.D. 894 del 09-05-2019 e D.D. 1115 del 07-06-2019
since 2018	Chair of the scientific advisory committee Panel “NordForsk” (Nordic Neutron Science Programme) An Organization Under THE Nordic Council of Ministers
2016-2018	Member of the advisory committee Panel “NordForsk” – <i>Nordic Neutron Science Programme</i>
2008-2017	Scientific Advisor EPSRC (<i>Engineering and Physical Science Research Council</i>), UK
2015-2018	Chair of the scientific advisor committee “Facility Access Panel FAP5 for ISIS <i>pulsed neutron and muon facility</i> (UK)
2016	Member of the scientific advisor committee for the <i>Swedish Foundation for Strategic Research</i> (SSF)
2011-2016	Member of the scientific advisor committee National Projects (PRIN) for the Italian Ministry of University and Research
2014	Member of the evaluation panel for the <i>Swedish Research Council</i> ,
2012	Evaluator for the Italian National Agency for the Evaluation of Universities and Research Institutes (ANVUR)
2012	Member of the Scientific Advisory Panel of Georgia <i>Nat. Science Foundation</i> (Georgia)
2006-2011	Member of the Scientific evaluation Panel FAP5 for <i>ISIS pulsed neutron and muon facility</i> (UK)
2011	Member of the scientic evaluation Panel of <i>New Eurasia Foundation</i> (Russia)
2010-2011	Member of the <i>Advisory Board</i> of ESS Bilbao (E)
2010-2011	Member of the Scientific evaluation Panel of Regione Lombardia
2008-2011	Member of the <i>Review Committee of the Spallation Neutron Source</i> , Oak Ridge National Laboratory (ORNL)
2010	Member of the Evaluation Panel of the <i>National Science Foundation</i> (US)
2002-2009	Member of the Evaluation Panel MIUR , Physical science (CIVR),
2000-2002	Member of the Evaluation Panel del <i>Science Advisory Board di Neutron Research Laboratory</i> (NRL) Studsvik Svezia

RESEARCH ACTIVITY

- Study of the structure and dynamics of quantum systems, hydrogen bonded molecular fluids and solids, disordered systems
- Design and development of neutron scattering instrumentation at the eV and MeV energies at ISIS neutron facility (UK): PRISMA, TOSCA at ISIS pulsed neutron and muon source (UK)
- Pioneer Deep Inelastic Neutron Scattering -DINS technique on eVs and VESUVIO beamlines at ISIS pulsed neutron and muon source (UK)
- Pioneer the use of MeV energy neutron at spallation neutron sources for fast irradiation SEE in electronic devices and contributed to the design and construction of ChiPIR at at ISIS pulsed neutron and muon source (UK)
- Pioneer industrial applications of neutron scattering through the determination of residual stress in materials
- Exploit eV spectroscopy, DINS techniques, related methods and technologies to enable neutron scattering measurements to reach at to second time scales
- Promote and contributing to exploiting the use of γ detectors in eV neutron spectroscopy at at ISIS pulsed neutron and muon source (UK)
- Pioneer the use of eV neutrons to explore Cultural Heritage artefacts

DIRECTION OF RESEARCH GROUPS

Director of a research group consisting in 2 Full Professors, 1 Associate Professor tenure track, 2 researcher, 2 postdoc, and 2 Ph D students carrying out research on theoretical and experimental research on materials and biomaterials.

RESEARCH PROJECTS

- | | |
|-----------|--|
| 2014-2020 | PANAREA II - "Agreement concerning collaboration in scientific research at the spallation neutron source ISIS" - CONSIGLIO NAZIONALE DELLE RICERCHE (I), (Co-I) |
| 2015-2017 | FANES and ECHIR within the framework of ICNRIESS (Italian Contribution to Neutron Research Instrumentation at the European Spallation Source), in kind MIUR for project ESS, CNR (Co-I) |
| 2013-2020 | STRASS (Sviluppo di Tecnologia e Rivelatori Avanzati per Sorgenti di Neutroni a Spallazione, in kind contribution MIUR for ESS Project, CNR, (Co-I) |
| 2011-2014 | SVILUPPO CULTURA Spin off, diagnostic of materials of cultural heritage interests, funded by Ministry of Research (Co-I) |
| 2011-2015 | META-Materials Enhancement for Technological Applications-FP7-PEOPLE-2010 IRSES, http://cordis.europa.eu/project/rcn/99153-en.html (Co-I) |
| 2008-2014 | PANAREA I - Project financed within the CNR-STFC Agreement concerning collaboration in scientific research at the spallation neutron source ISIS for the construction of neutron beamlines ChiPIR and IMAT - CONSIGLIO NAZIONALE DELLE RICERCHE (I) (Co-I) |
| 2005-2009 | ANCIENT CHARM: Analysis by neutron resonant capture imaging and other emerging neutron techniques: new cultural heritage and archaeological research methods - FP6, NEST Project, Integrating and Strengthening the European Research Area, http://cordis.europa.eu/project/rcn/81178-en.html (Co-I) |
| 2003 | Confined water: structure and dynamics –PRIN MIUR (Co-I) |
| 2002-2006 | MAPS: Materials and Plasma Science: Optical Spectroscopy, Neutron Spectroscopy and Theoretical Methods - FP5 Marie Curie Training Site, HPMT-CT-2001-00242, http://cordis.europa.eu/project/rcn/64210-en.html (Co-I) |
| 2001-2006 | e.VERDI:electron Volt Energy Resonance Detector Instrument - FP5, TMR-Access to Research Infrastructures, RTD- HPRI-CT-2001- 50020, http://cordis.europa.eu/project/rcn/58568-en.html , http://cordis.europa.eu/result/rcn/29234-en.html (PI) |

- 2000-2004 TECHNI: Technology for Neutron Instrumentation, FP5-HUMAN POTENTIAL, HPRI-CT-1999-500, <http://cordis.europa.eu/project/rcn/58205-en.html> (Co-I)
- 2000-2003 The Microscopic Structure and Dynamics of Supercritical Aqueous Fluids- PROGETTO INFM -PAIS : Progetto triennale finanziato dalla Sezione C dell'INFM (PI)
- 2000-2002 Study of the structure and microscopic dynamics of aqueous solution sub- and super-critical phases- MIUR PRIN
<http://cercauniversita.cineca.it/php5/prin/cerca.php?codice=MM02A73572>,
- 1998-2002 VESUVIO: A Project to provide enhanced neutron scattering capability at the highest energy transfers - FMGE980142 in FP4, TMR-Access to Large Scale Facility, RTD, <http://cordis.europa.eu/project/rcn/67287-en.html> and <http://cordis.europa.eu/result/rcn/29235-en.html> (PI)
- 1989-1990 Deep Inelastic Neutron Scattering-FP1-STIMULATION 1C-Project Reference: ST2*0314, <http://cordis.europa.eu/project/rcn/823-en.html>

COLLABORATIONS (SELECTED)

- since 2018 Professor Robert Robinson, University of Wollongong (Australia)
- since 2015 Professor Felix Fernandez-Alonso, University College London (UK)
- since 2013 Professor Loh Kian Ping, National University of Singapore, Singapore, *Proton dynamics in superheated graphene-water-pockets*
- since 2013 Professor Michele Ceriotti, University of Oxford (UK), Department of Chemistry, *Direct Measurement of Competing Quantum Effects on the Kinetic Energy of Heavy Water upon Melting*
- since 2012 Professor C. K. Loong, University of Hong Kong, School of Physics & Engineering and the Sino-French Institute of Nuclear Engineering and Technology of Sun Yat-Sen University (Guangzhou, China) and Institute of Crystal Materials of Shandong University (Jinnan, China)
- since 2011 Prof C. K. Loong, Sun Yet Sen University (China), *Inelastic neutron scattering in supercritical water*
- since 2011 Prof J. Y. Wang and X. Hu, Institute of Crystal Materials, Shandong University, Jinan, Shandong (China) *Crystal materials*
- since 2011 Dr C. Saltzman, University College London (UK) *Single particle dynamics of amorphous ice*
- 2011-2013 Professor Giulia Galli, University of Chicago (US), *Institute of Molecular Engineering, The quantum nature of the OH stretching mode in ice and water probed by neutron scattering experiments*
- since 2010 Professor C. K. Loong, China Advanced Research Reactor (CARR), of the China Institute of Atomic Energy (Beijing, China) and Tsinghua University (Beijing, China)
- since 2010 Prof R. Car, University of Princeton (USA) - *Proton quantum dynamics*
- since 2008 Dr Chris Frost, ISIS Neutron Facility (UK) - *Irradiation techniques, neutron technologies with MeV neutrons and realization of ChIPIR beamline*
- since 2007 Dr A. I. Kolesnikov, SNS, Oak Ridge National Laboratory (USA) – *Inelastic Neutron scattering of disordered materials*

LANGUAGES

ITALIANO
INGLESE

Mother
Fluent

SCIENTIFIC PRODUCTION

BIBLIOMETRIC DATA

CA is one of the Top Italian Scientists

Author of over 360 papers: 221 on international refereed journals ,over 150 contributions to international conferences, meetings, schools, and technical reports, 3 books
Her papers have been cited over 5000 times.

H-Index 39.

i-10-index 119

Orcid: <https://orcid.org/0000-0001-9497-142X>

LIST OF SELECTED PAPERS

Papers on International reviewed journals (Selected)

1. L. Verdolotti, C. Santillo, G. Rollo, G. Romanelli, M. Lavorgna, B. Liguori, G. Lama, E. Preziosi, R. Senesi, **C. Andreani**, M. di Prisco
MWCNT/rGO/natural rubber latex dispersions for innovative, piezo-resistive and cement-based composite sensors.
Scientific Report 11, 18975 (2021)
2. P. Ulpiani, G. Romanelli, D. Onorati, M. Krzystyniak, **C. Andreani**, R. Senesi
Kurtosis of momentum and displacement distributions in biphenyl.
Il Nuovo Cimento della Società Italiana di Fisica C, 44, 115 Article no. A10 (2021)
3. A. Cianchi, **C. Andreani**, P. Camarri, L. Fazi, C. Fornaro, E. Preziosi, A. Prioriello, R. Santonico, V. Scacco, C. Scatigno, R. Senesi, P. Picozza
Evaluation of the imaging performance of the TECNOMUSE muon tomograph and its feasibility in a real scenario.
European Physical Journal PLUS, 136:658, (2021)
4. G. Romanelli, D. Onorati, P. Ulpiani, S. Cancelli, E. Perelli-Cippo, J. I. Marquez D'Amian, S. Capelli, G. Croci, A. Muraro, M. Tardocchi, G. Gorini, C. Andreani, R. Senesi
Thermal neutron cross sections of amino acids from average contributions of functional groups.
Journal of Physics: Condensed Matter 33 285901 (2021)
5. R. Senesi, **C. Andreani**, P. Baglioni, L. A. E. Batista de Carvalho, S. Licoccia, M. P. M. Marques, G. Moretti, A. Noce, R. Paolesse, S. F. Parker, E. Preziosi, G. Romanelli, A. Romani, N. Di Daniele
Looking for Minor Phenolic Compounds in Extra Virgin Olive Oils Using Neutron and Raman Spectroscopies.
Antioxidants 10, 643 (2021)
6. **C. Andreani**, G. Romanelli, A. Parmentier, R. Senesi, A. I. Kolesnikov, Hsin-Yu Ko, R. Car
Hydrogen Dynamics in Supercritical Water Probed by Neutron Scattering and Computer Simulation.
Journal of Physical Chemistry Letters July 11, 9461–9467, (2020)
7. A. Bocedi, G. Romanelli, **C. Andreani**, R. Senesi
Hydrogen nuclear mean kinetic energy in water down the Mariana Trench: Competition of pressure and salinity.
J. Chem. Physics 153, 134306 (2020)
8. C. Scatigno, G. Romanelli, E. Preziosi, M. Zanetti, S. Parker, S. Rudic, **C. Andreani**, R. Senesi
A python algorithm to analyse inelastic neutron scattering spectra based on the y-scale formalism.
Journal of Chemical Theory and Computation 16, 7671-7680 (2020)
9. D. Onorati, G. Romanelli, P. Ulpiani, C. Cazzaniga, E. Preziosi, L. Arcidiacono, G. Festa, **C. Andreani**, R. Senesi, M.C. Morone
FLUKA simulations and benchmark measurements of the YAP(Ce) scintillators installed on the VESUVIO spectrometer.
Nuclear Inst. and Methods in Physics Research, A 969, 604012 (2020)
10. K.H. Andersen, ..., **C. Andreani** et al.
The Instrument Suite of the European Spallation Source
Nuclear Inst. and Methods in Physics Research, A, 163402 (2020)
11. G. Festa, G. Romanelli, R. Senesi, L. Arcidiacono, C. Scatigno, S.F. Parker, M.P.M. Marques, **C. Andreani**
Neutrons for Cultural Heritage –Techniques, Sensors, and Detection.
Sensors, 20, 502 (2020)
12. L. Arcidiacono, M. Martín-Torres, R. Senesi, A. Scherillo, **C. Andreani**, G. Festa

Cu-based alloys as a benchmark for T-PGAA quantitative analysis at spallation neutron sources.

Journal of Analytical Atomic Spectrometry - JAAS- 35, 331 (2020)

13. G. Festa, S.L. Lämmlein, R. Senesi, J. Price, C. Chiesa, C. Scatigno, N. Sadler, D. Mannes, L. Arcidiacono R. A. Robinson, **C. Andreani**

Effect of coating systems as a barrier to humidity for lutherie woods studied by neutron radiography.

Journal of Cultural Heritage 43,255 (2020)

14. G. Festa, T. Christiansen, V. Turina, M. Borla, J. Kelleher, L. Arcidiacono, L. Cartechini, R. C. Ponterio, C. Scatigno, R. Senesi, **C. Andreani**

Egyptian metallic inks on textiles from the 15th century BCE unravelled by non-invasive techniques and chemometric analysis.

Scientific Reports 9, Article number: 7310 (2019)

15. **C. Andreani**, C. Corsaro, D. Mallamace, G. Romanelli, R. Senesi, F. Mallamace

The onset of the tetrabonded structure in liquid water.

Science China-Physics, Mechanics & Astronomy, 62, No. 10: (2019)

16. G. Festa, T. Minniti, L. Arcidiacono, M. Borla, D. Di Martino, F. Facchetti, E. Ferraris, V. Turina, W. Kockelmann, J. Kelleher, R. Senesi, C. Greco, **C. Andreani**

Egyptian Grave Goods of Kha and Merit Studied by Neutron and Gamma Techniques.

Angew. Chem.Int. Edn., 130, 1 – 6, (2018)

17. A. Parmentier, L. Arcidiacono, R. Senesi, G. Romanelli, **C. Andreani**, J. Moir, G. Festa

Absolute efficiency calibration of a coaxial HPGe detector for quantitative PGAA and T-PGAA.

Journal of Physics: Conference Series, 1055 (1), 012010, (2018).

18. G. Romanelli, M. Krzystyniak, R. Senesi, D. Raspino, J. Boxall, D. Pooley, S. Moorby, E. Schooneveld, N. J. Rhodes, **C. Andreani**, F. Fernandez-Alonso

Characterisation of incident beam and current diffraction capabilities on the VESUVIO spectrometer.

Measurement and Technology 28, Number 9, 095501 (2017).

19. **C. Andreani**, M. Krzystyniak, G. Romanelli, R. Senesi and F. Fernandez-Alonso

Electron-volt neutron spectroscopy: beyond fundamental systems.

Advances in Physics 66, 1-73, (2017)

20. I. S. Anderson, **C. Andreani**, J. Carpenter, G. Festa, G. Gorini, C.-K. Loong, R. Senesi

Research Opportunities with Compact Accelerator-Driven Neutron Sources.

Physics Reports, 654, 1 (2016)

21. **C. Andreani**, G. Romanelli, R. Senesi

Direct measurements of quantum kinetic energy tensor in stable and metastable water near the triple point: an experimental benchmark.

Journal of Physical Chemistry Letters 7 (12), 2216–2220 (2016)

22. I. Bukreeva, A. Mittone, A. Bravin, M. Alessandrelli, P. Coan, V. Formoso, R. G. Agostino, M. Giocondo, F. Ciuchi, M. Fratini, G. Festa, **C. Andreani**, R. Bartolino, A. Lamarra, G. Gigli, G. Ranocchia, A. Cedola

Virtual unrolling and deciphering of Herculaneum papyri by X-ray phase-contrast tomography.

Scientific Report, 6, 27227 (2016)

23. A. Parmentier, J. J. Shephard, G. Romanelli, R. Senesi, C. G. Salzmann, **C. Andreani**

Evolution of Hydrogen Dynamics in Amorphous Ice with Density.

Journal of Physical Chemistry Letters 6, 2038-2042 (2015)

24. R. Senesi, G. Romanelli, M. A. Adams, **C. Andreani**

Temperature dependence of the zero point kinetic energy in ice and water above room temperature.

Chemical Physics 427, 111-116 (2013)

25. **C. Andreani**, G. Romanelli, R. Senesi

- A combined INS and DINS study of proton quantum dynamics of ice and water across the triple point and in the supercritical phase.
Chemical Physics 427, 106 -110 (2013)
26. G. Romanelli, M. Ceriotti, D. E. Manolopoulos, C. Pantalei, R. Senesi, **C. Andreani**
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67. **C. Andreani**, P. Bosi, F. Sacchetti, C. K. Loong
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Books

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in "Nanotechnologies and Nanomaterials for Diagnostic, Conservation and Restoration of Cultural Heritage", G. Lazzara and R. Fakhruddin, Elsevier
Advanced Nanomaterials, 2019, Pages 61-77.
- C. Andreani**, R. Senesi, M. Krzystyniak, G. Romanelliz, F. Fernandez-Alonso
Atomic Quantum Dynamics
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- G. Festa, N. Kardjilov, **C. Andreani**
Probing Our Heritage with Neutrons—One Successful Story
Pag 3 in *Neutron Methods for Archaeology and Cultural Heritage*, SPECIAL ISSUE, Springer International Publishing, Nikolay Kardjilov and Giulia Festa, Editors ISBN 978-3-319-33163-8 (2017)
- C. Andreani**, G. Festa, A. Lapi, A. Miceli, R. Senesi
Problemi di fisica generale.
Aracne editore (2016)
- C. Andreani**, G. Festa, A. Lapi, A. Miceli, R. Senesi
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- C. Andreani**, G. Festa, A. Lapi, R. Senesi
Quesiti e Soluzioni di fisica generale
ROMA: Exorma Edizioni, ISBN: 978-88-95688-51-0 (2010)
- C. Andreani**, G. Gorini, T. Materna
Novel Neutron Imaging Techniques for Cultural Heritage Objects

pages 229-252, Book Title: "Neutrons Imaging and Applications" Editors: Anderson, Ian S.; McGreevy, Robert; Bilheux, Hassina Z. SPECIAL Springer (2009)

Invited conferences(Selected)

1. *I Neutroni incontrano l'Arte*
International Science Communication and Science Museums: Prospects and New Ideas", 18-19 May 2017
2. *Photon energy resolved Neutron Resonance Capture Analysis and neutron energy resolved Prompt Gamma Activation Analysis for enhanced isotope identification using eV neutrons.*
HBS Workshop, Unkel (Germany) 29-30 September 2016
3. *I neutroni per illuminare il nostro passato e il nostro presente.*
4. XIII International Symposium of Universities "Knowledge and Mercy" Rome 7th -11th September 2016
5. *DINS to probe nuclear quantum effects"*
Workshop "Water and Water Systems", 22 July – 31 July 2016, Erice (Italy)
6. *I-UK Interdisciplinary Initiative on Dementia (2ID)*
Italian Healthcare and MedTech Chain in the field of Neuroscience, Roma 11 September 2015
Neutron Instrumentation at ISIS: the CNR contribution"
Workshop "Italy-UK partnership in Neutron Science: Thirty Years and Beyond", 26/11/2015
7. *Quantal Nuclear Motions in Condensed H-Bonded Systems*
Department of Physics & Materials Science, City University of Hong Kong, Hong Kong 14 October 2015
8. *ISIS May 2015: current status and future plans*
Workshop UCANS V: The Fifth Meeting of The Union for Compact Accelerator-Driven Neutron Sources, Padua, Italy 12-15 May 2015
9. *Probing our heritage*
LLB Workshop, New opportunities in Neutron Scattering Small to Medium Sources and Their Applications, Paris 14-15 May 2015
Inelastic Scattering I and Inelastic Scattering II
10. *Quantal Nuclear Motions in Condensed H-Bonded Systems*
VI Workshop on Electronvolt Neutron Spectroscopy: Frontiers and Horizons, Cosener's House, Oxfordshire, UK, 20th – 21st January 2014
11. *Probing our heritage*
Institute of Physics, Physical Society Club, 9th October 2013, London, UK
12. *Direct Measurement of Competing Quantum Effects in the Melting of Heavy Water*
3rd CMCSN Workshop, University of California, Davis, 24th - 26th June 2013
13. *Deep and Inelastic neutron scattering of quantum particles in ice, normal and metastable phases of water*
National University of Singapore, Department of Chemistry, 3 Science Drive, Singapore 4th July 2012 & Nanyang Technological University, 21 Nanyang link, Singapore 637371, 28th June 2012
14. *Proton dynamics in the stable and metastable phases of water*
University College London, Chemistry Department, 2 May 2012.
15. *International research and training at Tor Vergata: high energy neutron scattering, neutron imaging and irradiation techniques*
Institute of Crystalline Materials, Shandong University, 18 April 2012
16. *International Research and Training at Rome Tor Vergata: neutron irradiation and proton quantum dynamics"*
Sun Yat Sen University, The School of Physics & Engineering, 16 April 2012
17. *Research and Training at Rome Tor Vergata: the example of neutron imaging and irradiation*
Sino-French Institute of Nuclear Engineering and Technology, China, 13

Aprile 2012

18. *Current experimental nuclear physics and neutron scattering research activities in Rome: an overview*
Physics Department of the University of Hong Kong, 12 April 2012
19. *Deep and Inelastic neutron scattering of quantum particles in ice, normal and metastable phases of water*
Computational Materials and Chemical Sciences Network (CMCSN) - Structure and Dynamics of Water and Aqueous Solutions (SDWAS) Coordination Meeting, February 10-12, 2012 – Seattle, February 10, 2012
20. *European distributed Research Infrastructure for Cultural Heritage: ERICH*
ICT Innovation for Quality of Life and Healthy Ageing, European Parliament, Place du Luxembourg, Bruxelles, 22nd September 2011
21. *Neutron Scattering Technology in Material and Nano-Science Research*
State Key Laboratory of Nuclear Physics and Technology, Beijing, China, 15th Settembre 2010
22. *Proton momentum distribution in bulk and confined water*
15th International Workshop on Quantum Atomic and Molecular Tunneling in Solids and other Condensed Phases”, Darmstadt, Germany 5th Settembre 2010
23. *Neutron probe to illuminate the past*
24. International Summer School in Conservation of Historical, Monumental and Archaeological Sites, Università di Roma Tor Vergata, Luglio 2010
25. *Proton Quantum Dynamics in Water via DINS*
Helmholtz Zentrum Berlin für Materialien und Energie GmbH Berlin, Berlin, Germany, Marzo 2010
26. *Proton Quantum Effects in Water*
ETH Zürich, Computational Science, Department of Chemistry and Applied Biosciences, (2010)
27. *Momentum distribution and quantum effects in liquid water*
International workshop: Structure and Dynamics of Hydrogen-Bonded Systems, ICTP Trieste 26 - 27 October 2009.
28. *Deep Inelastic Neutron Scattering in liquid water*
London Centre of Nanotechnology, 17 Dicembre 2008
29. *Illuminating the past: neutron a tool for Cultural Heritage*
YICGG 2008, second edition, Research Competition 2008 Workshop “Global Governance: Growth and Innovation 2020” Rome, August 18 – 27, 2008
30. *Investigation of Archaeological Artefacts using Neutron Spectroscopy with eV neutrons*
31. Workshop on Neutron and Imaging 2006 – IAN2006, 23-26th October 2006, Oak Ridge (Tennessee, USA).
32. *Proton mean kinetic energy of water in sub- and super- critical conditions*
Workshop Progress in Electron Volt Neutron Spectroscopy, IV edition Perspectives in Neutron Spectroscopy at High Energy, 22 October 2006, Oak Ridge (Tennessee-USA).
33. *Investigation of marbles from VILLA ADRIANA via Neutron diffraction*
Workshop Neutron and Archaeology, 29 March 2005, Budapest, (Hungary).
34. *Single particle dynamics in fluid ^3He , ^4He and $^3\text{He}/^4\text{He}$ liquid mixtures*
International Conference on Neutron Scattering, Sydney, Australia il 27/11-2/12 2005.
35. *High Energy Inelastic Neutron Scattering on VESUVIO*
Workshop Progress in Electron Volt Neutron Spectroscopy, III edition Perspectives in Neutron Spectroscopy at High Energy, Santa Fe, New Mexico, USA. 24th April 2005.
36. *Short-time single particle dynamics in quantum and molecular systems*
European Conference on Neutron Scattering Montpellier-Francia 2-5 Settembre 2003

37. *Epithermal neutron scattering: present and future perspectives*
ILL (Grenoble-Francia) ILL 23 Giugno 200
38. *The e-VERDI Project*
Neutron Round Table - Joint RTD Network - European Conference 'ESS – The European Spallation Source, the European Source of Science Bonn 16-17 Maggio 2002.
39. *The single particle dynamical properties of matter studied by Neutron Spectroscopy at the eV energies: VESUVIO Project*
Inauguration of the VESUVIO spectrometer Rutherford Appleton Laboratory (ISIS) 15 April 2002
40. *Spectroscopy with eV neutrons*
41. ILL (Grenoble-Francia), 2000
42. *Neutron spectroscopy with eV neutrons*
6th European Spallation Source, General Meeting 20-22 September 1999 Ancona –Italy
43. *Single particle dynamics in fluid hydrogen and deuterium*
"European Physical Society- IV Liquid Matter Conference" Granada (Spagna) Luglio 1999
44. *VESUVIO- "A project to provide enhanced neutron scattering capability at the highest energy transfer*
Meeting "Neutron Scattering Instrumentation Workshop – Studsvik, Svezia 6 Ottobre 1997.
45. *Inelastic and quasi-elastic dynamics in superoxide dismutase*
46. Workshop on " Inelastic and quasi-elastic Neutron scattering in Biology" ILL Grenoble France 14-15 Ottobre 1996
47. *Proton momentum distributions in fluid H2*
European Physical Society -5th General Conference of the Condensed matter Division". Aprile 22-25 1996 Baveno Stresa Italia.
48. *The impulse approximation in molecular fluids.*
Workshop, "The use of high energy neutrons in spectroscopy", Rutherford Appleton Laboratory (UK) il 4 Maggio 1995.
49. *The atomic momentum distribution of liquid deuterium: a comparison between experiment and theory.*
2nd Liquid Matter International Conference, Firenze 18-22 Settembre 1993
50. *Is hydrogen bond present in hydrogen halides other than HF?*
NATO Advanced Research Workshop on Hydrogen Bond Networks, Cargese, Corsica (Francia) 16-22 Agosto 1993
51. *Deriving the asymptotic scaling function in Deep Inelastic Neutron Scattering.*
International Workshop "Highlights in the Physics of Liquids: Experimental opportunities from the Neutron and Synchrotron Radiation Sources" Trieste 19 - 29 Luglio 1993
52. *Orientational Correlations in Liquid Iodine"*
"Symposium on the Physics of Molecular Liquids" Oxford (UK) 1-4 Aprile 1991
53. *Impulsive neutron scattering at ISIS*
IX General conference of the Condensed Matter Division- Nice 6-9 Marzo 1989
54. *Deep inelastic neutron scattering from hydrogenous solids*
International Symposium: "Neutron scattering at ISIS: recent highlights in condensed matter research" - Villa Mondragone (Monteporzio Catone) 14-16 Dicembre 1988
55. *Incoherent inelastic neutron scattering on polycrystalline ice Ih*
Symposium on Neutron Scattering, Berlino Ovest (6-8 Agosto 1984)

Reviewed International
Conference Proceedings
(Selected)

1. **C. Andreani**, P. Bosi, E. Mazzega, F. Sacchetti, C.G. Windsor
Observations of the dispersion relation of the O-D stretching modes in heavy ice
"The neutron and its applications" Cambridge, (13-17 settembre 1982)
2. A. J. Allen, **C. Andreani**, M. T. Hutchings, C. M. Sayers, C. G. Windsor
Measurements of internal stress within bulk materials using neutron scattering
Conference for the 50th anniversary of the discovery of neutron "The neutron and its applications" Cambridge, (13-17 settembre 1982)
3. A. J. Allen, **C. Andreani**, M.T. Hutchings, C.M. Sayers, C.G. Windsor
Neutron diffraction studies of texture and residual stress in weldments"
V International Conference on Metallurgy and Material Science, Denmark (1984)
4. **C. Andreani**, F. Cilloco, L. Nencini, D. Rocca
Measurements of the liquid bromine structure factor $S(Q)$ at $T=30C$ and $T=200C$ along the coexistence curve by neutron diffraction
"Annual Symposium on Neutron Scattering", Berlino Ovest (6-8 Agosto 1984)
5. **C. Andreani**, V. Merlo, M.A. Ricci
Vibrational density of states in polycrystalline sulphuric acid
Workshop "Neutron scattering in molecular solids", Grenoble 12-15 Luglio 1988
6. **C. Andreani**, V. Merlo, M.A. Ricci
The structure of deuterium sulphide. A pulsed neutron scattering experiment at ISIS
International Symposium: "Neutron scattering at ISIS: recent highlights in condensed matter research" - Villa Mondragone (Monteporzio Catone) 14-16 Dicembre 1988
7. **C. Andreani**, G. Baciocco, R. Holt, J. Mayers
Resolution in deep inelastic neutron scattering using pulsed sources
Workshop on Momentum distributions 24-26 ottobre 1988 Argonne National Laboratory (USA)
8. **C. Andreani**, G. Baciocco, J. Mayers
Initial state effects in deep inelastic neutron scattering
Workshop on Momentum distributions 24-26 ottobre 1988 Argonne National Laboratory (USA)
9. **C. Andreani**, U. Buontempo, J. Mayers, F.P. Ricci
Energy resolved neutron radiography
Symposium on Neutron Scattering, Bombay India (20 -25 Gennaio (1991)
10. **C. Andreani**, M. Nardone, F. P. Ricci
Partial Structure factors and orientational correlations in liquid H₂O
Workshop "International workshop on the methods in the determination of partial structure factors of disordered matter by neutron and anomalous x-ray diffraction." Grenoble (F) 10 -11 settembre (1992)
11. **C. Andreani**, A. Filabozzi, A. Deriu
"Dynamics of hydrogen atoms in superoxide dismutase "
International Workshop: QuasiElastic Neutron Scattering - QENS 95 Parma Italy Settembre 7-8 (1995).
12. **C. Andreani**, A. Filabozzi, A. Deriu, D.Di Cola, F.Menzinger, A.Desideri
"Dynamics of Cu/Zn Superoxide Dismutase"
Congresso Internazionale QENS'95 di Parma (7-8 settembre 1995).
13. **C. Andreani**, A. Deriu, A.Filabozzi, D.Russo
"Temperature dependence of low frequency dynamics by inelastic neutron scattering"
1st European Conference on Neutron Scattering, ECNS'96, Interlaken (CH), 8-11 Ottobre, 1996
14. **C. Andreani**, D. Colognesi, A. Filabozzi, M. Nardone, R. Azuah

- "Temperature dependence of single particle kinetic energy in liquid parahydrogen"*
1st European Conference on Neutron Scattering, ECNS'96, Interlaken (CH), 8-11 Ottobre, 1996.
15. **C. Andreani**, D. Colognesi, A. Filabozzi, M. Nardone, E. Pace
Deep inelastic neutron scattering from dense fluid parahydrogen
Scientific Highlights in Isis (1997) Annual Report - Pag 60.
 16. **C. Andreani**, D. Colognesi, A. Filabozzi,
"Atomic and molecular momentum distributions in quantum fluids by Compton Neutron Scattering"
1st European Conference on Neutron Scattering, ECNS'96, Interlaken (CH), 8-11 Ottobre, 1996.
 17. **C. Andreani**, D. Colognesi and R. Senesi
"Kinetic energy in low density supercritical ⁴He"
IV Liquid Matter Conference"- Granada (Spagna) Luglio (1999)
 18. J Tomkinson, ZA Bowden, J Mayers, J Norris, NJ Rhodes, **C Andreani**, D Colognesi, AL Fielding, M Nardone, M Praitano
VESUVIO. A project to provide enhanced neutron scattering capabilities at the highest energy transfers
ECNS'99. 2. European conference on neutron scattering (1999)
 19. R. Senesi, **C. Andreani**, D. Colognesi
"Single Particle Kinetic Energy In Solid And Dense Liquid ³He.
Scientific Highlights In Isis 2001 Annual Report - Cclrc Rutherford Appleton Laboratory (Uk) Pag 60.
 20. **C. Andreani**, A. Pietropaolo, A. D'angelo, G. Gorini, R. Senesi, M. Tardocchi
"Gamma Detectors For Deep Inelastic Neutron Scattering In The 1-100 Ev Region"
International Conference on Neutron Scattering, München, 9.-13. September 2001
 21. J. Tomkinson, **C. Andreani**, R. Newport, G. Gorini, J. Mayers, A. D'Angelo, N. Rhodes, E. Schooneveld, Z. Bowden and, R. Coleman 1
"The eVERDI project: Electron-Volt Energy Resonance Detector Instrument"
European Conference 'ESS – The European Spallation Source/The European Source of Science'. Bonn 16-17 May 2002
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