

PERSONAL INFORMATION

Armida Sodo



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Sex F | Date of birth 10/06/1974 | Nationality Italian

WORK EXPERIENCE

2021 November - now

Associate Professor (SSD: PHYS-06/A - Fisica per le scienze della vita, l'ambiente e i beni culturali)

Dipartimento di Scienze, Università Roma Tre, Via della Vasca Navale 84, Rome, Italy

- Laboratory Head of Raman Spectroscopy Laboratory (SpectralLab)
- Application of Raman Spectroscopy to biology (Thyroid cancer diagnosis- exosomes- Bacteria)
- Raman investigation of geological materials (Mn oxides)
- Raman spectroscopy applications to Cultural Heritage (management of in situ measurements, design of dedicated instrumentation, study of original art objects - authenticity investigations of fakes from Laboratorio del Falso).
- SERS investigations on dyes
- study of nanoparticles based coatings for stone and metal conservation

Sector University - Research

2018 -2021

Researcher - RTDB

Dipartimento di Scienze, Università Roma Tre, Via della Vasca Navale 84, Rome, Italy

- Application of Raman Spectroscopy to Thyroid cancer diagnosis
- Raman investigation of geological materials (Mn oxides)
- Raman spectroscopy applications to Cultural Heritage (management of in situ measurements, design of dedicated instrumentation, study of original art objects – drawing of Vasari, pictorial fragments from Villa della Piscina etc, - authenticity investigations of fakes from Laboratorio del Falso).
- SERS investigations on dyes
- study of nanoparticles based coatings for stone conservation

Sector University - Research

2016 January –2018 October

Post-doctoral fellow

Dipartimento di Scienze, Università Roma Tre, Via della Vasca Navale 84, Rome, Italy

Raman spectroscopy applications to Cultural Heritage (in particular plasters, ceramic fragments, yarns and glazes); study of high temperature geological systems; design of sample holders for SERS measurements.

Sector University - Research

2010 January – 2015 December

Researcher - RTDB

Dipartimento di Scienze, Università Roma Tre, Via della Vasca Navale 84, Rome, Italy

- **Research with own funding supports (responsibilities):** materials characterization and study of their degradation processes, by Raman, FTIR and XRF, in collaboration with the Chemistry Laboratory of Istituto centrale per il restauro e la conservazione del patrimonio archivistico e librario,
- Research on the interactions between writers and graphic media, also exploring the possibility of using other types of spectroscopic techniques (XPS - DRIFT) besides those historically used in the laboratory.
- Research on original ceramic finds (Mesoamerican estucado ceramics, ceramics from Sudan, etc.) and on laboratory standards through the use of neutron sources, Raman spectroscopy, XRD and SEM / EDS.

- Research on biological degradation processes of historical-artistic interest material, in particular study of endoliths and patinas by Raman, XRD and SEM / EDS spectroscopy.
- Characterization of mineralogical phases and gems for studies of their origin (in particular biotites and opals) by Raman spectroscopy, IR absorption, XRD and SEM / EDS.
- Responsible for Raman spectroscopy both in situ measurements and on fragments on objects of historical and artistic interest in collaboration with the ISCR (among others: preparatory drawing of the School of Athens by Raphael, bronze statues of De Chirico and Manzù, frescoes of the Domus Aurea , etc)
- Applications of Raman spectroscopy to aqueous solutions of strong acids and bases, to studies of catalytic processes, semiconductors and graphene.
- Applications of Raman spectroscopy to the study of hydration of soft contact lenses
- Didactics and scientific dissemination (university courses and thesis tutor)

Sector University - Research

In this period I got a position, detailed in the box below, by Istituto centrale per il restauro e la conservazione del patrimonio archivistico e librario (ICRPAL).

In addition, from October 2012 to March 2013 I was on compulsory maternity leave.

2012 April – 2013 November

Collaboration contract on the project “Realization and Elaboration of a Raman Database of Dyes used during XX century”

Istituto centrale per il restauro e la conservazione del patrimonio archivistico e librario, via Milano 76 00184 Roma – Italy

- Raman spectroscopy measurements and data analyses on originals and laboratory standards

Sector Ministero per i Beni e le Attività culturali - Research

2009 April – 2009 December

Collaboration Contract

Istituto centrale per il restauro e la conservazione del patrimonio archivistico e librario, via Milano 76 00184 Roma – Italy

- Raman spectroscopy measurements and data analyses on originals and laboratory standards

Sector Ministero per i Beni e le Attività culturali – Research

DURING THE SAME PERIOD I get a position- details above- that allowed me to increase competences in industrial and management field

2009 April – 2009 December

Product Manager

EXALL Srl - Via Dante Alighieri,5 04011 Aprilia (LT)

- Development and design of Raman instrumentation dedicated to ophthalmology

Sector PMI – consultancy and development of instruments in the field of pharmaceuticals

2009 March

Researcher RTD

Dipartimento di Scienze Roma Tre, Dipartimento di Fisica “E. Amaldi”, via della Vasca Navale 84, 00146 Roma – Italy

- Replace with main activities and responsibilities

- Maintenance of the Liquids Group website.

Business of sector Replace with type of business or sector
Sector University – Research

2007 March – 2009 February

Post-doctoral fellow

Università degli Studi Roma Tre, Dipartimento di Fisica “E. Amaldi”, via della Vasca Navale 84, 00146 Roma – Italy and Istituto Centrale per il Restauro e la Conservazione del Patrimonio Archivistico e Librario, via Milano 76 00184 Roma – Italy

- Research on writing supports (paper, papyrus, parchment): characterization of materials and study of degradation processes, collaborating in national and international projects of dell’Istituto Centrale per il Restauro e la Conservazione del Patrimonio Archivistico e Librario

- Manager of a new research line on contemporary art materials, in particular on acrylics and marker inks

- Manager for in situ Raman measurements on objects of historical and artistic interest in collaboration with ICR
- Responsible for the design and coordinator of a technology transfer project between a company and Roma Tre University for the construction of an industrial demonstrator based on Raman spectroscopy applied to the ophthalmological field (funding obtained € 100,000)
- Didactics and scientific dissemination (university courses and thesis tutor)

Sector University – Research

2005 March – 2007 February

Post-doctoral fellow

Università degli Studi Roma Tre, Dipartimento di Fisica “E.Amaldi”, via della Vasca Navale 84, 00146 Roma – Italy and Istituto Centrale per il Restauro e la Conservazione del Patrimonio Archivistico e Librario, via Milano 76 00184 Roma – Italy

- Research on early medieval fictile samples through the use of neutron sources (in England, France and Hungary)
- Research on inks (China, tannic iron, logwood): characterization of materials and study of degradation processes, collaborating on national and international projects of Istituto Centrale per il Restauro e la Conservazione del Patrimonio Archivistico e Librario
- Responsible of a new research line on contemporary art materials: in particular on the Klein blue
- Didactics and scientific dissemination (university courses and thesis tutor)

Sector University – Research

2003 May – 2004 November

Post-doctoral fellow

ESRF (European Synchrotron Radiation Facility), Polygone Scientifique Louis Néel 6, rue Jules Horowitz 38000 Grenoble France

- Optimization of the instrumental performance of the ID26 beamline for applications to Cultural Heritage
- Commissioning phases for the calibration and characterization of new optical components
- Study of systems of historical and artistic interest. In particular paper foxing; Blue Maya composition; manufacturing processes of the welding of ancient jewels; study of the effectiveness of specific restoration products

Sector Research Institute

2003 March – 2003 April

Collaboration Contract

INFN – Istituto Nazionale di Fisica della Materia – UdR di Roma Tre

- Design and implementation of specific software for the control of the optical components of the portable Raman system previously created and for the acquisition and treatment of data on the Labview platform

Sector Research Institute

2001 January – 2002 December

Contract fellow

INFN – Istituto Nazionale di Fisica della Materia – UdR di Roma Tre and Istituto Centrale per il Restauro e la Conservazione del Patrimonio Archivistico e Librario, Rome, Italy

- Integrated research and study on paper degradation processes
- Design, implementation and optimization of a portable Raman system specific for applications to Cultural Heritage
- Applications of the portable Raman system to cases of historical and artistic interest (in situ measurements on codexes, frescoes, etc.)
- Collaborations have been formally stipulated with various superintendencies and research bodies that I personally carried out and of which I was the direct manager
- Responsible for Raman measurements in the international integrated study project on the Red Convent (Sohag- Upper Egypt)

Sector Research Institute

2003 March – 2003 April

Contract fellow

INFN – Istituto Nazionale di Fisica della Materia – UdR di Roma Tre Istituto Centrale per il Restauro e la Conservazione del Patrimonio Archivistico e Librario, Rome, Italy

- Applications of Raman spectroscopy to Cultural Heritage: in particular identification and study of pigment degradation processes; development of new restoration products - reducing agents for paper; study of inclusions and substitutions in gems

• Spectrochemical characterization of differently degraded papers
 • Non-destructive applications for the characterization of ancient documents
 Sector Research Institute

EDUCATION

 2003 March **PhD in Chemical Physics**

Università degli Studi di Roma "Sapienza"

Supervisor: Prof. Mario Barteri

Title: Realizzazione e caratterizzazione di un sistema Raman portatile per le applicazioni ai Beni Culturali"

Quote: Excellent

 1993 November-1998 October **Degree in Chemistry**

Università degli Studi di Roma "Sapienza"

Supervisor: Prof. Mario Barteri

Title: Reazioni redox indotte da ultrasuoni a bassa frequenza su metallo proteine

Quote: 110/110

 1988 September-1993 June **High school graduated**

Liceo Classico "Francesco Vivona", Rome

Quote: 60/60

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2
French	B2	B1	B2	B2	B1

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
[Common European Framework of Reference for Languages](#)

Organisational / managerial skills

- Laboratory Head of the Raman Spectroscopy Laboratory (SpectraLab) at Dipartimento di Scienze, section Nanoscience - Università Roma Tre
- Charge of "TERZA Missione" for Dipartimento di Scienze, Università Roma Tre
- Charge of "ALUMNI Dipartimento di Scienze ROMA TRE" association – section Nanoscience
- Local PI for the PNRR project - DEVELOPMENT OF MULTIPARAMETRIC APPROACH FOR NEW INSTANT DIGITAL PATHOLOGY TO SUPPORT FAST DIAGNOSTIC PRECISION AND APPROPRIATE CLINICAL DECISION PNRR-POC-2022-12376531- ongoing project (end 2025)
- PI project ERCOLE "Le ville del parco di centocelle" – DTC Lazio, Intervento TE1- protocollo GeCoWEB n. 305-2020-35572 del 22/05/2020; CUP F85F21001090003 – Project completed in 2024
- WP Leader project GRAL - Progetti Gruppi di Ricerca 2020 - protocollo GeCoWEB n. A0375-2020-36679 - "GRAL - GRen And Long-lasting stone conservation products" - CUP F85F21001710009- Project Completed in 2023
- WP Leader project SUPERARE - SUPER-particelle per Rivestimenti Autopulenti e antivegetativi a

- Rilascio IEnto, Progetti di Gruppi di Ricerca 2017, Regione Lazio; Project completed in 2021.
- WP Leader project ADAMO - n. B86C18001220002 DTC – Lazio – Project completed in 2020.
 - WP Leader project TIRAMA - Raman Spectroscopy as an innovative tool to improve diagnosis of thyroid cancer and reduce unnecessary surgery. BANDO RICERCA FINALIZZATA 2018 del Ministero della Salute. Project completed in 2023
 - President of the association ONLUS “JUMP – Joining University to Market and People” (www.j-u-m-p.net). The association, which has as its purpose the transfer of knowledge with high technological and innovative content between those who do research and those who can bring the product of ideas to the market, has already been the winner of several calls for internal training. of university spin-offs. The association was closed in 2012.
 - Coordinator of the project “Ricostruzione dei processi produttivi della ceramica archeologica precolombiana in Centroamerica: il caso della ceramica estucado in El Salvador” financed by 8.000 € (PROGETTO DI INTERNAZIONALIZZAZIONE - Università Roma Tre – 2012)
 - Scientific Committee of ART 2011- 10th International Conference on non-destructive investigations and microanalysis for the diagnostics and conservation of cultural and environmental heritage, Florence (Italy) – April 13-15, 2011
 - coordinator of the technological transfer project “Sistema Raman Portatile a Doppia Dispersione Ortogonale (DODRAS)” financed by 100.000 € (PROGETTO TECH2EMOTION -2008)
 - Organization of exhibitions, conferences and workshop: in particular:
 - Exhibition: Conservare. ... Sì ma con la griffe!, curata da M. Bicchieri e F. Fiorani, Roma, Calco-grafia Nazionale, 24 settembre - 4 ottobre 2007
 - Workshop: La carta e le mediazioni grafiche. Storia, degradazione, metodi di studio e di intervento, Roma, ICPL, 28 giugno 2006
 - workshop RICH- “Research Infrastructures for Cultural Herit-age” Trieste, 12-13 dicembre 2005
 - workshop SR2A 2005 - “Synchrotron Radiation in Art and Archaeology” Grenoble, 9 -12 febbraio 2005
 - Exhibition “La pittura murale antica: materiali, strumenti, tecniche, conser-vazione” durante la “Settimana della Cultura Scientifica” a L’Aquila (6-12 maggio 2002)

Technical skills

- Strong expertise in design and realisation of dedicated Raman instrumentation. Strong expertise in Raman, FTIR, XRF, SEM-EDS measurements and data analyses. Strong expertise in softwares for data analyses (Wire, Labspec, Origin, Igor). Good knowledge in programming (MatLab and Labview). Strong expertise in chemistry laboratory

Invited communications

I presented my research as oral communications or poster in more than 50 international conferences. In particular:

- 2024 - invited talk SIF 2024
- 2020 - invited talk “ Raman spectroscopy and fakes: contributions to artworks authentication” LIMS, Frascati, 22-23 October 2020
- 2019 – invited talk Keynote lecture “Spectroscopic investigation of Cappadocia proto-Byzantin paintings “ for 10th International Conference on the application of Raman spectroscopy in Art and Archaeology, RAA 2019 Postdam 3-7 September 2019
- 2018 – invited talk “INDAGINI ARCHEOMETRICHE PER LO STUDIO DI AUTENTICITA’ DI MANUFATTI ANTICHI” - 104° Congresso della Società Italiana di Fisica- Cosenza 20 September 2018
- 2017 – invited article M. Sbroscia, F. Bruni, A. Sodo, T. Corridoni, and M. A. Ricci OH Stretching Dynamics in Hydroxide Aqueous Solutions. Submitted to J. Chem. Phys. Invited ar-ticle in Special Topic Issue on Ions in Water (2017)
- 2015 – invited article A. Sodo, La legatura dell’Evangelario Marciano Lat III,111: storia di un felice connubio fra arte e scienza Ithaca: Viaggio nella Scienza V, 67-78, 2015. Consultabile al seguente indirizzo: http://ithaca.unisalento.it/nr-5_2015/articolo_llp_07.pdf
- 2011- La Fisica incontra la città – ciclo di conferenze divulgative del dipartimento di Fisica “E.Arnaldi” di Roma Tre, Roma, 11 maggio 2011, Come i fisici vedono le opere d’arte
- 2009- invited talk “La degradazione degli inchiostri e dei supporti scrittori nei manoscritti originali” XCV Congresso Nazionale Società Italiana di Fisica Bari, 28 Settembre - 3 Ottobre, 2009

Honour and awards

I won the price for the best oral contribution in the followings:

- 101° Congresso Nazionale della Società Italiana di Fisica, Rome 21-25 September 2015.; Oral communication: CARATTERIZZAZIONE DELL’APPARATO PITTORICO DI CERAMICHE ESTUCADO ME-DIANTE SPETTROSCOPIA RAMAN, SEM/EDS e XRD”
- 4th International Conference Raman in Art and Archaeology , Modena September 2007.;

Oral communication: "The colours of Etruscan painting: a study on the Tomba dell'Orco in the necropolis of Tarquinia"

Prizes:

- 2008: Premio Archimede for "the results obtained in the field of Cultural Heritage Beni Culturali".
- 1999: Premio Young Researcher in INFMeeting 1999

Didactics

- AA 2017/2018, AA 2018/2019, AA 2019/2020, AA 2020/2021, AA 2021/2022, AA 2022/2023, AA 2023/2024: Università Roma Tre, Dipartimento di Architettura, Corso di Laurea in Scienze dell'Architettura
Course: Fondamenti di Fisica B
- AA 2021/2022, AA 2022/2023, AA 2023/2024: Università Roma Tre, Dipartimento di Scienze, Corso di Laurea in Ottica e Optometria
Course: Materiali per l'ottica
- AA 2015/2016, 2016/2017 e 2017/2018: Università Roma Tre, Corso di Perfezionamento "LA TUTELA DEL PATRIMONIO CULTURALE: CONOSCENZA STORICA E DIAGNOSTICA SCIENTIFICA PER IL CONTRASTO ALLE AGGRESSIONI CRIMINALI" e Master in "ESPERTI NELLA TUTELA DEL PATRIMONIO CULTURALE"
Course : Tecniche di diagnostica scientifica
- AA 2014/2015 - 2015/2016 – 2016/2017: Università Roma Tre, Dipartimento di Scienze, Master in "BIOLOGY FOR THE KNOWLEDGE AND CONSERVATION OF CULTURAL HERITAGE"
Course : Applicazioni di tecniche spettroscopiche ai beni culturali: spettroscopia Raman e l'assorbimento IR
- Ecis 2016 - Training course "Colloids and Surfaces in Cultural Heritage: Physico-Chemical Methodologies and New Investigative Approaches; Roma 1-3 settembre 2016;
Lecture: "Raman spectroscopy in Cultural Heritage"
- AA 2015/2016: Università Roma Tre, Dipartimento di Scienze, Corso di Laurea in Ottica e Optometria
Course : Applicazioni dell'ottica
- AA 2014/2015 – 2015/2016: Università Roma Tre, Dipartimento di Scienze, Corso di Laurea in Ottica e Optometria
Course : Laboratorio di Calcolo (esercitatrice)
- AA 2013/2014 -2014/2015 - 2015/2016: Università Sapienza di Roma, Dipartimento di Chimica, Master in "Sostanze organiche naturali"
Course : Spettroscopia Raman e applicazioni ai Beni Culturali
- AA 2013/2014: Università della Tuscia, Dipartimento di Scienze dei Beni Culturali (Disbec)
Course : Fisica
- AA 2008/2009 - 2009/2010 – 2010/2011 – 2011/2012 - 2013/2014: Ars Labor – Istituto Professionale per il Restauro.
Course : Chimica e Biologia del Restauro
- AA 2008/2009 - 2009/2010 – 2010/2011 - 2011/2012 – 2012/2013 – 2013/2014: Università Roma Tre, Dipartimento di Fisica, Corso di Laurea in Ottica e Optometria
Course : Applicazioni dell'ottica ai Beni Culturali
- AA 2006/ 2007 - 2007/2008: Università Roma Tre, Dipartimento di Fisica, Corso di Laurea in Ottica e Optometria
Course : Esercitazioni di Laboratorio di Calcolo
- AA 2006/2007- 2007/2008: Ars Labor – Istituto Professionale per il Restauro.
Seminars: "Applicazioni della spettroscopia Raman ai beni culturali".
- 2006: Istituto Centrale per la Patologia del Libro, nel corso della giornata di studio "La carta e le

mediazioni grafiche. Storia, degradazione, metodi di studio e di intervento".
Lecture: Applicazioni della spettroscopia Raman ai Beni Librari

- AA 2005/ 2006: Università Roma Tre, Dipartimento di Fisica, Corso di Laurea in Fisica
Course: Esercitazioni di termodinamica
- 2005 Università degli Studi di Udine, sede di Gorizia.
Master Universitario di primo livello per esperto in conservazione e restauro di beni librari (EsCoReAL),
Course: Archeometria dei Beni Librari
- AA 2004/2005 - 2005/2006 - 2006/2007 Università Roma Tre, Dip. di Ingegneria Elettronica. Laurea Magistrale in Ingegneria Elettronica-Misure per la qualità ed i Beni Culturali
Seminar: "La spettroscopia Raman applicata ai beni culturali".
- AA 1998/1999 - 1999/2000 - 2000/2001 Università Cattolica del Sacro Cuore di Roma, Scuola diretta a fini speciali per tecnici cosmetici
Course : "Controllo di qualità microbiologico e tossicologico"

Tutor of Stages (25), Specialistic thesis (7) and PhD thesis (4)

Publications

Total Number of publications: 141
Peer reviewed publications: 104
h-index: 23; Citation: 1621 (web of science)
Submitted waiting for review: 6
Peer reviewed publications without SCI Factor: 23
Chapter of books and publication without SCI Factor:14

- 1) A. Privitera, S. Bernardini, G. Della Ventura, P.Ballirano, E. Arbolino, C. Coletti, L. Conte, F. Pacetti, S. Morretta, A. Sodo., A multi-analytical investigation of Imperial (I-II Century AD) Roman cooking ware from "Villa della Piscina" and the so called "Minerva Medica Temple" (Rome, Italy) accepted Journal of Raman Spectroscopy (2024)
- 2) M. Iorio, V. Graziani, L. Ruggiero, E. Biscarini, R. Libera, G. Della Ventura, M. Fedi, S. Barone, L. Liccioli, P. Branchini, A. Sodo and L. Tortora, Pigments, fibres, wood, and leather to rebuild the history: a XVI century, painted, wooden shields from Lepanto Battle accepted Journal of Cultural Heritage (2024)
- 3) C. Pelosi, F. Di Stasio, L. Lanteri, M. Zuena, M. Sardara, A. Sodo, The "Restoration of the Restoration": Investigation of a Complex Surface and Interface Pattern in the Roman Wall Paintings of Volsinii Novi (Bolsena, Central Italy), Coatings, 14,4, 408 (2024), DOI10.3390/coatings14040408
- 4) A. Privitera, S. Tuti; U. Laverdura; A. R. Taddei; L. Ruggiero; L. Duranti; E. Di Bartolomeo; M. A. Ricci; A. Sodo, One - stage synthesis and characterisation of supramolecular silica systems incorporating corrosion inhibitors for gradual release applications, accepted J. Material Science (2024), <https://doi.org/10.1007/s10853-023-09306-5>
- 5) F. Bartoli, L. Corradi, Z. Hosseini, A. Privitera, M. Zuena, A. Kumbaric, V. Graziani, L. Tortora, A. Sodo, G. Caneva, New ecofriendly nanosystems with Essential oils for a long-lasting conservation of stone artworks: assessment through in vitro viability tests, Gels, 10, 132 (2024) 132. <https://doi.org/10.3390/gels10020132>
- 6) F. Bartoli, Z. Hosseini, V. Graziani, M. Zuena, C. Venettacci, G. Della Ventura, L. Tortora, A. Sodo, G. Caneva, In Situ Evaluation of New Silica Nanosystems as Long-Lasting Methods to Prevent the Biodeterioration of Stone Monuments, Coatings, 14, 163 (2024) <https://doi.org/10.3390/coatings14020163>
- 7) G. Della Ventura, N. El Moutaouakkil, B. Boukili, S. Bernardini, A. Sodo, L. Pronti, M. Cestelli-Guidi, F. Holtz, F. Lucci, Tracking the Ti4+ substitution in phlogopite by spectroscopic imaging: A tool for unravelling the growth of micas at HP-HT conditions, Geoscience Frontiers (2024), doi: <https://doi.org/10.1016/j.gsf.2024.101777>
- 8) L. Bellantuono, R. Tommasi, E. Pantaleo, M. Verri, N. amoroso, P. Crucitti, M. Di Gioacchino, F. Longo, A. Monaco, A.M. Naciu, A. Palermo, C. Taffon, S. Tangaro, A. Crescenzi, A. Sodo, R. Bellotti, An eXplainable Artificial Intelligence analysis of Raman spectra for thyroid cancer diagnosis, Scientific Reports, 2023, 13(1), 16590, 10.1038/s41598-023-43856-7
- 9) M. Zuena, L. Baroni; V. Graziani; C. Pelosi; L. Tortora; L. Valbonetti; A. Sodo, Diving into

- colours: a multi-analytical approach to a 16th century drawing by Gherardo Cibo, *Vibrational Spectroscopy*, 2023, 127, 103561, 10.1016/j.vibspec.2023.103561
- 10) A. Privitera, F. Porcelli, D. Paoloni, L. Persichetti, G. Sotgiu, A. Ruocco, G. Capellini, A. Sodo "Chemical-physical characterization of 5-Phenyl-1H-tetrazole inhibitive behaviour: a new non-toxic compound for a sustainable protection of Cu-alloys", *Journal of Applied Electrochemistry*, 2023, 53(12), pp. 2375–2395, 10.1007/s10800-023-01936-6
 - 11) S. Bernardini, G. Della Ventura, A. Sodo, M. Benites, L. Jovane, J.R. Hein, F. Lucci, Micro-Raman mapping of critical metals (Li, Co, Ni) in a rhythmically laminated deep-ocean ferromanganese deposit, *Geochemistry*, 2023, 126014, 10.1016/j.chemer.2023.126014
 - 12) A. Privitera, F. Palermo, S. Ridolfi, A. Sodo, A multi analytical approach to unmask Etruscan-Corinthian fake pottery: a contribution to the illicit trafficking of cultural goods, *JRS*, (2023) doi.org/10.1002/jrs.6578
 - 13) L. Gallitelli, G. Cesarini, A. Sodo, A. Cera, M. Scalici, Life on bottles: Colonisation of macroplastics by freshwater biota, *Science of the total environment*, 873, 162349, 10.1016/j.scitotenv.2023.162349 (2023)
 - 14) D. Piazzolla, S. Bonamano, F. De Muto, S. Scanu, S. Bernardini, A. Sodo, G. Della Ventura, Marco Marcelli, Microlitter occurrence, distribution, and summertime transport trajectories in the coastal waters of the north-eastern Tyrrhenian Sea (Italy), *Geosystems and Geoenvironment*, 2(4), 100192 (2023) 10.1016/j.geogeo.2023.100192
 - 15) M. Zuena, V. Fondi, B. Adembris, G. Della Ventura, A. Sodo, A multidisciplinary approach to investigate the peculiar artistic technique of Scagliola: modern age decorations in Hadrian's Villa (Tivoli, Italy), *Vibrational Spectroscopy* (2022) https://doi.org/10.1016/j.vibspec.2022.103465
 - 16) C. Manfredi, M. Zuena, L. Ruggiero, C. Lucarelli, S. Ridolfi, L. Tortora, and A. Sodo, The forger's identikit: a multi-technique characterization of Pippo Oriani's fake paintings, accepted *Dyes and Pigments*, 207, 110755 (2022) https://doi.org/10.1016/j.dyepig.2022.110755
 - 17) Palermo, A. Sodo, A. M. Naciu, M. Di Gioacchino, A. Paolucci, A. di Masi, D. Maggi, P. Crucitti, F. Longo, E. Perrella, C. Taffon, M. Verri, M. A. Ricci, A. Crescenzi, Clinical use of Raman spectroscopy improves diagnostic accuracy for indeterminate thyroid nodules, *The Journal of Clinical Endocrinology & Metabolism* (2022) doi.org/10.1210/clinem/dgac537
 - 18) E. Fardelli, M. Lucidi, M. Di Gioacchino, S. Bashiri, L. Persichetti, G. Capecci, T. Gasperi, A. Sodo, P. Visca, G. Capellini Bio-physical mechanisms of dehydrating membrane of *Acinetobacter Baumannii* linked to drought-resistance, *Biochimica et Biophysica Acta – Biomembranes*, 1864, 184045 (2022)
 - 19) di Masi, R. L. Sessa, Y. Cerrato, G. Pastore, B. Guantario, R. Ambra, M. Di Gioacchino, A. Sodo, M. Verri, P. Crucitti, F. Longo, A. M. Naciu, A. Palermo, C. Taffon, F. Acconcia, F. Bianchi, P. Ascenzi, M. A. Ricci, A. Crescenzi, Unraveling the effects of carotenoids accumulation in human papillary thyroid carcinoma, *Antioxidants*, 11, 1463 (2022)
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