

Dr. Marco Sbroscia - Ph.D.

PERSONAL INFORMATION	<p>☎ <i>Office:</i> (+39) 06.4991.4304 ☎ <i>Lab:</i> (+39) 06.4991.4254 ✉marco.sbroscia@uniroma1.it</p>
CITIZENSHIP	Italian
WORK	<p>Graduated technician, official and technical manager of SmartLab: Sapienza Università di Roma - Dipartimento di Fisica Rome, Italy. Starting from 16th December 2019</p> <ul style="list-style-type: none">• Brief description: SmartLab is a facility of the physics department of Sapienza, University of Rome. It has been designed to perform spectromicroscopy experiments in the demanding Ultra High Vacuum condition, thus guaranteeing an atmosphere free of contaminants. Systems can be also probed at cryogenic regime (10 K). The aim of this laboratory is the characterisation of low-dimensional systems by means X-rays photoemission spectroscopy and micro-Raman and micro-photoluminescence spectroscopies. My role is to manage and coordinate all the technical and operational aspect of the lab, supporting and participating in the research activities taking place there.• Technicals: Ultra High Vacuum, Photoemission spectroscopy from core levels and valence band, electron diffraction, UHV micro-Raman spectroscopy, 2D materials, maintenance and development of UHV compatible parts.
RESEARCH INTERESTS	<p>My reaserch interest is mainly devoted to the characterisation of materials wether they are solutions or crystalline solids and interfaces. After consolidating standard characterisation techniques, as electron spectroscopies, synchrotron radiation based spectroscopies and Raman microscopy, I moved the attention to non standard approaches, as coincidence electron spectroscopies and single-photon based interferometry, both under the applicative and technical aspects.</p>
PREVIOUS POSITIONS	<p>Post Doctoral position at Università degli Studi Roma Tre - Dipartimento di Scienze - Laboratorio di Spettroscopia Raman, Diagnostica per i beni culturali, Rome, Italy.</p> <p>1st January 2019 - 15th December 2019</p> <ul style="list-style-type: none">• Project: DTC Lazio - ADAMO - Analysis, diagnostics and monitoring techniques for preservation and restoration of Cultural Heritage• Topic: Analysis, diagnosis and monitoring of Cultural Heritage• Group leader: Prof. Maria Antonietta Ricci• Brief description: Characterisation of artworks as wall paintings, painted leathers or marbles to name a few, using Raman Spectroscopy aiming at determine the used color palette, the presence of modern consolidation treatments if any and the study of degradation processes.• Technicals: Conventional and high-confocal Raman Spectroscopy, lasers, monochromators, spectrometers.

Post Doctoral position at
Università degli Studi Roma Tre - Dipartimento di Scienze - Ottica - Gruppo NEW Quantum Optics (NEQO), Rome, Italy.

1 April 2016 - 31 December 2018

- Project: **FETOPEN-RIA QCUMBER**
 - frequency-entanglement control in parametric down-conversion with ultra-fast pulses;
 - multiparameter estimation in dispersive samples.
- Topic: **Development of an electronic acquisition chain for coincidence measurements with quantum light for application in quantum metrology.**
- Group leader: Prof. Marco Barbieri
- Brief description: Characterisation of materials using non conventional techniques, as quantum light-based interferometry, with the perspective of applications in biology, plasmonics and quantum enhanced sensing. In this respect I explored the extension of quantum metrological protocols to the case of noisy environment. I also studied the interplay between quantum information and thermodynamics, characterising the cost of realising and processing a measurement, thus exploring the relation bridging quantum metrology and quantum thermodynamics, looking also at non-equilibrium states.
- **Technicals: Laser sources, Spatial light modulator, Manipulation of light beams, interferometry, optical elements**

Fellowship at
Università degli Studi Roma Tre - Dipartimento di Scienze - Laboratorio LASEC Rome, Italy.

January 2015 - October 2015

- Topic: **Development and characterisation of a multichannel electron analyser.**
- Advisors: Professor Giovanni Stefani, Professor Alessandro Ruocco
- Brief description: The core of this activity has been the development of a LabVIEW code for remote control and data acquisition from a multichannel analyser for spectroscopy and time correlation measurements, including the remote control of sample manipulation and the high voltage supplies for the electrostatic optics. As preliminary activity, the whole pre-existent acquisition and control software has been updated.
- **Technicals: electrostatic analysers, multichannel position sensitive detectors, electronic/acquisition chains, HV supplies, electrostatic lenses assembly.**

TEACHING

01 November 2018 – 31 October 2019

Tutor for the course of Mechanics and Thermodynamics for the industrial engineering program - Frontal classes. Università Campus Bio-Medico, Via Alvaro del Portillo 21, 00128 Roma (Italia)

**01 March 2019 – 31
October 2019**

Tutor for the course of Fundamentals of Physics B for course on studies in architecture - Frontal classes. Università degli Studi Roma Tre, Roma (Italia)

**01 November 2017 – 31
October 2018**

Tutor for the course of Mechanics and Thermodynamics for the industrial engineering program - Frontal classes. Università Campus Bio-Medico, Via Alvaro del Portillo 21, 00128 Roma (Italia)

**01 November 2016 – 31
October 2017**

Tutor for the course of Mechanics and Thermodynamics for the industrial engineering program - Frontal classes. Università Campus Bio-Medico, Via Alvaro del Portillo 21, 00128 Roma (Italia)

**September 2016 – Decem-
ber 2017**

Tutor for the online module in Quantum Optics of the course in Modern Physics within the LS-OSA project.
Università degli Studi Roma Tre, Via della Vasca Navale 84, 00146 Roma (Italia)

**01 November 2015 – 31
October 2016**

Tutor for the course of Physics for the food sciences and human nutrition program - Frontal classes. Università Campus Bio-Medico, Via Alvaro del Portillo 21, 00128 Roma (Italia)

EDUCATION

Università degli Studi Roma Tre, Rome, Italy.

**January 2012 - December
2014**

Ph.D in Physics

Degree completed on 27th January 2015

- Ph.D Thesis Topic: Auger-Photoelectron Coincidence Spectroscopy on magnetic thin films: a study of multiplet spin structure and electron correlation.
- Advisor: [Professor Giovanni Stefani](#)
- Area of Study: Growth, characterisation and analysis of magnetic thin films using photoemission, X-ray Magnetic Linear Dichroism (XMLD) and electron diffraction experiment; investigation of magnetic phase transition, local magnetism, final state multiplet spin contributions and correlation effects in ferromagnetic and antiferromagnetic systems by APECS coincidence spectroscopy using synchrotron radiation.

**September 2009 - Septem-
ber 2011**

Master degree in Physics

Degree completed on 21st September 2011 - Mark: **110/110 cum laude**

- Thesis Topic: Local antiferromagnetism of NiO studied by Auger - PhotoElectron Coincidence Spectroscopy (written in italian)
- Original title: L'antiferromagnetismo locale del NiO studiato per mezzo della spettroscopia di coincidenza fra fotoelettroni ed elettroni Auger

- Advisor: Professor Giovanni Stefani
- Area of Study: Growth, characterisation and analysis of NiO investigated by using synchrotron radiation based techniques like X-ray Magnetic Linear Dichroism (XMLD) and APECS coincidence spectroscopy.

September 2005 - February 2009

Bachelor degree in Physics

Degree completed on 25th February 2009 - Mark: **110/110 cum laude**

- Thesis Topic: Raman spectroscopy on NaOH in aqueous solutions as a function of temperature and concentration (written in italian)
- Original title: Spettroscopia Raman su soluzioni acquose di NaOH in funzione di concentrazione e temperatura
- Advisor: Professor Maria Antonietta Ricci
- Area of Study: Investigation of the OH⁻ ions dynamics and their hydration shell by the study of temperature and concentration dependence of the stretching spectral region in aqueous solution of NaOH using Raman spectroscopy.

TECHNICAL SKILLS

• **Software**

- LabVIEW: high level - development of several data analysis codes and acquisition code for a multichannel electron energy analyser; NI-DAQ interface for remote control and automation.
- OriginPro: high level - used for data analysis and graphics.
- Wolfram Mathematica: basic level - development of simple simulation codes and data analysis.
- Blender 3D: basic level - development of picture and short movies of experimental setups.

• **Hardware**

- Development and use of custom linear and non linear (quantum) optical simulators
- Use and maintenance of ultra high vacuum systems
- Laser, X-ray, UV and electronic sources
- Electrostatic analysers
- Spectrometers and monochromators for light
- Growth and characterisation of ultrathin films, crystals and solutions
- Electron spectroscopies: X-ray photoemission spectroscopy, Electron Energy Loss Spectroscopy, Electron Diffraction, APECS and (e,2e)
- Optical Spectroscopies: Raman Spectroscopy, Quantum light based interferometry

Participation at schools

InMRAM 2013, Grenoble, France (1st-3rd July 2013)

Introductory course on Magnetic Random Access Memory.

- The School gives basics of magnetism, spintronics and MRAM technology as general overview of their characteristics and applications for students, researchers and engineers in microelectronics.

STELLA school 2012, Pavia, Italy (18th-29th June 2012)

School for Training in Experiments with Lasers and Laser Applications.

- The School is a laboratory session in which general overview of experimental techniques based on the use of lasers are given. Particularly two techniques chosen by the student are applied in performing experiments.

SILS school, Duino, Trieste, Italy (7th-21st September 2009)

X School on Synchrotron Radiation: Fundamentals, Methods and Applications.

- The School gives a general overview of the characteristics and potentiality of Synchrotron Radiation to graduate students and young researchers interested in its use.

AWARDS

Degree award granted by **ADISU**¹.

Scholarship granted by **ADISU**.

Scholarship granted by **ADISU**.

Scholarship granted by **ADISU**.

Scholarship granted by **ADISU**.

for master degree thesis
academic year **2010/2011**
academic year **2009/2010**
academic year **2007/2008**
academic year **2006/2007**

CONFERENCE
PARTICIPATION

Primo Convegno Nazionale del DTC Lazio

Roma, Italy

30th September 2019 - *oral and poster presentations*

Technart 2019

Bruges, Belgium

7th - 10th May 2019 - *oral and poster presentations*

QIM V

Quantum Measurements and Information V, Rome, Italy

4th - 6th April 2019 - *poster presentation*

GISR2017

Italian meeting on Raman Spectroscopies and Non Linear Optical Effects 2017,
Trieste, Italy

7th - 9th June 2017 - *oral presentation*

IQIS2017

10th Italian Quantum Information Science Conference, Firenze, Italy

12th-15st September 2017 - *oral presentation*

DISSEMINATION

- “Notte Europea dei ricercatori” 2018: Demonstrations - **Università degli Studi Roma Tre**
- “Occhi sulla Luna” 2017: Lab tours - **Università degli Studi Roma Tre**
- “Occhi sulla Luna” 2016: Lab tours - **Università degli Studi Roma Tre**
- “Notte Europea dei ricercatori” 2016: Demonstrations - **Università degli Studi Roma Tre**

OTHER
ENGAGEMENTS

Referee for New Journal of Physics
Referee for Minerals (MDPI)

Assistant supervisor for the Bachelor thesis of Irene Di Giorgio - "Spectroscopic study of blue minerals inside Latium volcanics"; Original title: "Studio spettroscopico di minerali blu nelle vulcaniti del Lazio"

PEER-REVIEWED
PUBLICATIONS

[43] M. G. Betti, E. Blundo, M. De Luca, M. Felici, R. Frisenda, Y. Ito, S. Jeong, D. Marchiani, C. Mariani, A. Polimeni, **M. Sbroscia**, F. Trequattrini, R. Trotta, *Homogeneous spatial distribution of deuterium chemisorbed on free-standing graphene - Nanomaterials* **12**, 2613 (2022)

[42] A. Paolone, E. Placidi, E. Stellino, M. G. Betti, E. Majorana, C. Mariani, A. Nucara, O. Palumbo, P. Postorino, **M. Sbroscia**, F. Trequattrini, M. Granata, D. Hofman, C. Michel, L. Pinard, A. Lamaitre, N. Shcheblanov, G. Cagnoli, F. Ricci, *Argon and other defects in amorphous SiO₂ coatings for gravitational-wave detectors - Coatings* **12**, 1001 (2022)

[41] M. G. Betti, E. Placidi, C. Izzo, E. Blundo, A. Polimeni, **M. Sbroscia**, J. Avila, P. Dudidn, K. Hu, Y. Ito, D. Prezzi, M. Bonacci, E. Molinari, C. Mariani, *Gap opening in double-sided highly hydrogenated free-standing graphene - Nano Letters*, **22**, 2971 (2022)

[40] N. Jimenez-Arevalo, E. Flores, A. Giampietri, **M. Sbroscia**, M. G. Betti, C. Mariani, J. R. Ares, I. J. Ferrer, F. Leardini, *Borocarbonitride layers on titanium dioxide nanoribbons for efficient photoelectrocatalytic water splitting - Materials* **14**, 5490 (2021)

[39] **M. Sbroscia**, A. Verna, S. Stefani, S. R. Vaidya, R. Moroni, F. Bisio, S. Iacobucci, F. Offi, S. Simonucci, A. Ruocco, and R. Gotter *Electron correlation effects in the exchange coupling at the Fe/CoO/Ag(001) ferro-/antiferro-magnetic interface - Journal of Magnetism and magnetic materials* **529**, 167872 (2021)

[38] C. Cardoso, G. Avvisati, P. Gargiani, **M. Sbroscia**, M.S. Jagadeesh, C. Mariani, D.A. Leon, D. Varsano, A. Ferretti, and M.G. Betti, *Magnetic response and electronic states of well defined Gr/Fe/Ir(111) heterostructure - Physical review materials* **5**, 014405 (2021)

[37] M. M. S. Abdelnabi, C. Izzo, E. Blundo, M. G. Betti, **M. Sbroscia**, G. Di Bella, G. Cavoto, A. Polimeni, I. Garcia-Cortes, I. Rucandio, A. Morono, K. Hu, I. Yoshikazu, C. Mariani, *Deuterium adsorption on free-standing graphene - Nanomaterials* **11**, 130 (2021)

[36] **M. Sbroscia**, C. Pelosi, G. Agresti, A. Paolucci, P. Pogliani, L. Ruggiero, A. Sodo, *Spectroscopic investigation of Cappadocia proto-Byzantine paintings - Journal of Raman spectroscopy* **52**, 95 (2021)

[35] V. Cimini, S. Gherardini, M. Barbieri, Il. Gianani, **M. Sbroscia**, L. Buffoni, M. Paternostro, F. Caruso, *Experimental characterization of the energetics of quantum logic gates - NPJ Quantum Information* **6**, 96 (2020)

[34] M. Mellini, I. Gianani, G. Ramponi, **M. Sbroscia**, S. Pieroni, *Quantum optics meets enzyme biology - Optics and photonics news* **31**, 8 (2020)

¹ADISU is a national organisation for the right to study.

- [33] M. Romani, L. Pronti, **M. Sbroscia**, F. Petrucci, O. Tarquini, G. Verona-Rinati, M.A. Ricci, A. Sodo, M. Colapietro, M. Marinelli, A. Pifferi, M. Cestelli-Guidi “*St. Joseph with the Child*” by Gian Lorenzo Bernini: a definitive artwork or a preparatory drawing? A multidisciplinary study of the only autograph painting of the Artist, preserved at Palazzo Chigi of Ariccia (Rome) - *Journal of Cultural Heritage* **46**, 283 (2020)
- [32] G. Ventruti, G. Della Ventura, G. Capitani, **M. Sbroscia**, A. Sodo, *High-temperature study of basic ferric sulfate, FeOHSO₄* - *Physics and chemistry of minerals* **47**, 43 (2020)
- [31] G. Della Ventura, F. Capitelli, **M. Sbroscia** and A. Sodo, *A Raman study of chalcogen species in sodalite-group minerals from the volcanic rocks of Latium (Italy)* - *J. Raman Spectr.* **51**, 1513 (2020)
- [30] **M. Sbroscia**, M. Di Gioacchino, P. Ascenzi, P. Crucitti, A. di Masi, I. Giovannoni, F. Longo, D. Mariotti, A. M. Naciu, A. Palermo, C. Taffon, M. Verri, A. Sodo, A. Crescenzi and M.A. Ricci, *Thyroid cancer diagnosis by Raman spectroscopy*- *Scientific Reports* **10**, 13342 (2020)
- [29] R. Gotter, A. Verna, **M. Sbroscia**, R. Moroni, F. Bisio, S. Iacobucci, F. Offi, S.R. Vaidya, A. Ruocco and G. Stefani *Unexpectedly large electron correlation measured in Auger spectra of ferromagnetic iron thin films: orbital-selected Coulomb and exchange contributions* - *Phys. Rev. Lett.* **125**, 067202 (2020)
- [28] G. Germinario, A. Ciccola, I. Serafini, L. Ruggiero, **M. Sbroscia**, F. Vincenti, C. Fasolato, R. Curini, M. Ioele, P. Postorino, A. Sodo *Gel substrates and ammonia-EDTA extraction solution: a new non-destructive combined approach for the identification of anthraquinone dyes from wool textiles* - *Microchemical journal* **155**, 104780 (2020)
- [27] Alessandra di Masi, Loris Leboffe, Armida Sodo, Gaia Tabacco, Roberto Cesareo, **Marco Sbroscia**, Isabella Giovannoni, Chiara Taffon, Pierfilippo Crucitti, Filippo Longo, Silvia Manfrini, Maria Antonietta Ricci, Paolo Ascenzi, Anna Crescenzi, Andrea Palermo *Metabolic profile of human parathyroid adenoma* - *Endocrine* (2019) 1-9
- [26] **Marco Sbroscia**, Mariangela Cestelli Guidi, Francesco Colao, Stella Falzone, Claudia Gioia, Patrizia Gioia, Claudia Marconi, Daniele Mirabile Gattia, Ersilia Maria Loreti, Marco Marinelli, Mauro Missori, Franca Persia, Lucilla Pronti, Martina Romani, Armida Sodo, Gianluca Verona Rinati, Maria Antonietta Ricci, Roberta Fantoni *Multi-analytical non-destructive investigation of pictorial apparatuses of “Villa della Piscina” in Rome* - *Microchemical journal* **153**, 104450 (2020)
- [25] I. Gianani, **M. Sbroscia**, M. Barbieri *Measuring the time-frequency properties of photon pairs: A short review* - *AVS Quantum Science* **2**, 011701 (2020)
- [24] V. Cimini, M. Mellini, G. Rampioni, **M. Sbroscia**, L. Leoni, M. Barbieri and I. Gianani *Adaptive tracking of enzymatic reactions with quantum light* - *Optics Express* **27**, 35245 (2019)
- [23] V. Cimini, I. Gianani, **M. Sbroscia**, J. Sperling and M. Barbieri *Measuring coherence of quantum measurements* - *Phys. Rev. Research* **1**, 033020 (2019)
- [22] M. M. Feyles, L. Mancino, **M. Sbroscia**, I. Gianani and M. Barbieri *Dynamical role of quantum signatures in quantum thermometry* - *Phys. Rev. A* **99**, 062114 (2019)

- [21] V. Cimini, I. Gianani, L. Ruggiero, T. Gasperi, **M. Sbroscia**, E. Roccia, D. Tofani, F. Bruni, M. A. Ricci and M. Barbieri *Quantum sensing for dynamical tracking of chemical processes - Phys. Rev. A*, **99**, 053817 (2018)
- [20] G. Ventruti, G. Della Ventura, M. Lacalamita, **M. Sbroscia**, A. Sodo, J.R. Plaisier, G. Cinque and E. Schingaro *Crystal-chemistry and vibrational spectroscopy of ferrinatriite, $Na_3[Fe(SO_4)_3] \cdot 3H_2O$, and its high-temperature decomposition - Phys. Chem. Minerals* (2018); <https://doi.org/10.1007/s00269-018-0991-9>
- [19] V. Cavina, L. Mancino, A. De Pasquale, I. Gianani, **M. Sbroscia**, R.I. Booth, E. Roccia, R. Raimondi, V. Giovannetti and M. Barbieri *Bridging thermodynamics and metrology in non-equilibrium Quantum Thermometry - Phys. Rev. A*, **98**, 050101 (R) (2018)
- [18] E. Roccia, V. Cimini, **M. Sbroscia**, I. Gianani, L. Ruggiero, L. Mancino, M.G. Genoni, M.A. Ricci and M. Barbieri *Multiparameter approach to quantum phase estimation with limited visibility - Optica* 5(10), 1171-1176 (2018)
- [17] L. Mancino, V. Cavina, A. De Pasquale, **M. Sbroscia**, R. I. Booth, E. Roccia, I. Gianani, V. Giovannetti and M. Barbieri *Geometrical bounds on irreversibility in open quantum systems - Phys. Rev. Lett.* **121**, 160602 (2018) - Editors' suggestion
- [16] **M. Sbroscia**, I. Gianani, E. Roccia, V. Cimini, L. Mancino, P. Aloe and M. Barbieri *Assessing frequency correlation through a distinguishability measurement. - Opt. Lett.* **43** (16), 4045-4048 (2018)
- [15] I. Gianani, E. Polino, **M. Sbroscia**, A. S. Rab, E. Roccia, L. Mancino, N. Spagnolo, M. Barbieri and F. Sciarrino *Hong-Ou-Mandel control through spectral shaping - J. Opt.* **20**, 085201 (2018) - awarded as paper of the week
- [14] G. Di Filippo, **M. Sbroscia**, G. Stefani, R. A. Bartynski and A. Ruocco *Excitation and decay of aluminum bulk plasmons at the aluminum/copper-phthalocyanine interface - Phys. Rev. B* **97**, 235420 (2018)
- [13] L. Mancino, **M. Sbroscia**, E. Roccia, I. Gianani, V. Cimini, M. Paternostro and M. Barbieri *Information-reality complementarity in photonic weak measurements - Phys. Rev. A* **97**, 062108 (2018)
- [12] **M. Sbroscia**, G. Della Ventura, G. Iezzi and A. Sodo *Quantifying the A-site occupancy in amphiboles: a Raman study in the OH-stretching region - European Journal of Mineralogy* (2018) - <https://doi.org/10.1127/ejm/2018/0030-2727>
- [11] **M. Sbroscia**, F. Bruni, A. Sodo, T. Corridoni, and M.A. Ricci *OH Stretching Dynamics in Hydroxide Aqueous Solutions - J. Phys Chem: B* **122**, 4077-4082 (2018)
- [10] L. Mancino, **M. Sbroscia**, E. Roccia, I. Gianani, F. Somma, P. Mataloni, M. Paternostro and M. Barbieri *The entropic cost of quantum generalized measurements - NPJ Quantum Info.* **4**, 20 (2018)
- [9] **M. Sbroscia**, I. Gianani, L. Mancino, E. Roccia, Z. Huang, L. Maccone, C. Macchiavello and M. Barbieri *Experimental ancilla-assisted phase-estimation in a noisy channel - Phys. Rev. A* **97**, 032305 (2018)
- [8] G. Pierantozzi, **M. Sbroscia** and A. Ruocco *Templating effect of the substrate on the structure of Cu-phthalocyanine thin film - Surf. Sci.* **669**, 176 (2018)
- [7] V. Ansari, E. Roccia, M. Santandrea, M. Doostdar, C. Eigner, L. Padberg, I. Gianani, **M. Sbroscia**, J. M. Donohue, L. Mancino, M. Barbieri and C. Silberhorn

Heralded generation of high-purity ultrashort single photons in programmable temporal shapes - Opt. Express **26**(3), 2764 (2018)

[6] E. Roccia, M.G. Genoni, L. Mancino, I. Gianani, M. Barbieri, and **M. Sbroscia**, *Monitoring dispersive sample with single photons: the role of frequency correlations - Quantum Meas. Quantum Metrol.* **4**, 64 (2017)

[5] E. Roccia, I. Gianani, L. Mancino, **M. Sbroscia**, F. Somma, M. G. Genoni and M. Barbieri *Entangling Measurements for multiparameter estimation with two qubits - Quantum Sci. Tech.* **3**, 01LT01 (2017)

[4] M. Barbieri, E. Roccia, L. Mancino, **M. Sbroscia**, I. Gianani and F. Sciarrino *What Hong-Ou-Mandel interference says on two-photon frequency entanglement - Sci. Rep.* **7**: 7247 (2017)

[3] E. Roccia, I. Gianani, L. Mancino, **M. Sbroscia**, I. Miatka, F. Somma and M. Barbieri *Experimental method for measuring classical concurrence of generic beam shapes J. Opt.* Volume **19**, 055614, (2017)

[2] L. Mancino, **M. Sbroscia**, I. Gianani, E. Roccia and M. Barbieri *Quantum simulation of single-qubit thermometry using linear optics Phys. Rev. Lett.* **118**, 130502, (2017)

[1] R. Gotter, **M. Sbroscia**, M. Caminale, S. R. Vaidya, E. Perfetto, R. Moroni, F. Bisio, S. Iacobucci, G. Di Filippo, F. Offi, A. Ruocco, G. Stefani, L. Mattera and M. Cini *Phys. Rev. B* **88**, 094403, (2013)

VOLUME
CONTRIBUTIONS

[A] L. Mancino, M.A. Ciampini, M.D. Vidrighin, **M. Sbroscia**, I. Gianani and M. Barbieri *Maxwell's Demon in Photonic Systems - in Thermodynamics in the Quantum Regime - Fundamental Aspects and New Directions*, Eds. F. Binder, L.A. Correa, C. Gogolin, J. Anders and G. Adesso, Springer (2018) - ISBN 978-3-319-99045-3

NON
PEER-REVIEWED
PUBLICATIONS

[II] G. Della Ventura, I. Di Giorgio, A. Sodo e **M. Sbroscia** *I minerali blu della serie sodalite-lazurite del Lazio - Il Cercapietre*, (2018), 7-21

[I] A. Sodo, G. Della Ventura, M. Martini, M. A. Ricci, L. Ruggiero, **M. Sbroscia** and E. Sibilìa *Analisi archeometriche per la caratterizzazione e l'autenticazione di antefisse fittili recuperate dalla Guardia di Finanza* in "Sacra Nemora. La cultura del sacro nei contesti santuariali in area albana. Rinvenimenti archeologici e recuperi della guardia di finanza", Exhibition catalog - Dielle editore, ISBN: 8890593458 (2017)

Autorizzo il trattamento dei miei dati personali presenti nel CV ai sensi dell'art. 13 del Decreto Legislativo 30 giugno 2003, n. 196 "Codice in materia di protezione dei dati personali" e dell'art. 13 del GDPR (Regolamento UE 2016/67)

Roma, 21 marzo 2023
In fede,

Marco Sbroscia