

## ACCEPTANCE LETTER

<b>your reference</b>	<b>my reference</b>	<b>contact</b>	<b>date</b>
Charles KP Journal Coordinator Journal of Powder Metallurgy & Mining Email: <a href="mailto:metallurgy@scholarlyjournals.org">metallurgy@scholarlyjournals.org</a>	Simona Raneri Ph. D.	University of Pisa Department of Earth Sciences Via Santa Maria, 53 56126 - Pisa (Italy)  email: <a href="mailto:simona.raneri@unipi.it">simona.raneri@unipi.it</a> tel.: 0039 0502215728	30.08.2017

### *To whom it may concern*

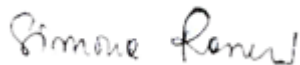
The undersigned Dr. Simona Raneri, young researcher at the University of Pisa, Department of Earth Science, is pleased to accept your invitation to join the Editorial Board as a Co. Editor-in-chief / Editorial Board Member for the Journal of Powder Metallurgy & Mining.

Please, find enclosed to the present acceptance letter my personal C.V., including list of publications, Biography, Research Interests and a recent passport size photo to display at Journal website.

Keenly looking forward to be part of the Journal of Powder Metallurgy & Mining Editorial Board.

Yours sincerely,

Dr. Simona Raneri



## BRIEF PERSONAL PRESENTATION

Dr. Simona Raneri is a Conservator Scientist for Cultural Heritage and Geologist; she has got her Ph.D. in Earth Science cum laude at the Dept. of Bio., Geo. and Env. Science of the University of Catania in 2016 (Italy) with a project devoted to (i) inspect the surface texture and sub-surface structure changes due to degradation processes in natural building stones employed in Cultural Heritages and (ii) investigate the efficiency of innovative nano-structured products for stone protection and conservation. In detail, a theoretical and empirical approach based on innovative and non-destructive methods has been applied in order to: *highlight* the potential of classical and innovative complementary methods in quantifying the structural changes in porous materials due to degradation processes and conservative treatments, *explain* how they help to facilitate the understanding of stone weathering and *validate* the use of geometrical models in describing complex pore systems.

During her graduate training, part of her research was presented in several international conferences and published in specialized journals. She was fortunate enough to perform several training periods and experimental sessions at Italian and foreign Research Institutes, deepening her knowledge in the use of novel analytical techniques such as NMR, SANS, X-ray and neutron imaging. In these frameworks, she also acquired skills and expertise in the acquisition and processing data as well as in the statistical treatment of several datasets in order to compare and merge results getting from different analytical methods.

Beside the main research topic focused on natural stones, the competences acquired in the application of both classical and innovative and non-invasive methods allowed supporting several scientific research projects promoted by several research groups, mainly focused on archaeometry. She widely collaborated with other research groups, specialized in several scientific disciplines (i.e., Geology, Archaeology, Material Sciences, Chemistry, Physics, etc.). She delivered numerous research papers (32 article in peer reviewed journals) and conference presentations (about 40), ensuring the dissemination of the results of her researches.

She is really open-minded and keen to incorporate findings from different methods into research; she is a very active researcher, not afraid of huge workloads and mastering new research areas.

# FULL CURRICULM VITAE

## PERSONAL INFORMATION

**First Name-Surname:** Simona Raneri

**Address:** C.da Fusco snc – Mineo (CT), Sicily, Italy

**Nationality:** Italian

**Date of birth:** 08/10/1987

**Institution:** University of Pisa, Department of Earth Sciences, Via Santa Maria, 53, 53126 - Pisa (Italy)

**Telephone (mobile):** 0039 392 3139569

**Email:** [simona.raneri@unipi.it](mailto:simona.raneri@unipi.it)

**Webpage:** [https://www.researchgate.net/profile/Simona\\_Raneri](https://www.researchgate.net/profile/Simona_Raneri)

## CURRENT POSITION

**30/11/16** - Young researcher (GEO/09) (RTD-a, L.240/2010) at the Department of Earth Sciences of the present University of Pisa

## PREVIOUS POSITION

**2016** Post-doctoral fellowship for the development of the research “Analisi delle modificazioni tessiturali e strutturali indotte dall'uso di prodotti protettivi nanostrutturati su rocce calcarenitiche” at the University of Catania in the framework of the project “Nanotecnologie e nanomateriali per i beni culturali (TECLA) PONO3PE 00214 1/6 — CUP: E92I14001570005”

## INTERNATIONAL PROJECTS

**2017-** EU Project Horizon 2020: Nanomaterials for conservation of European architectural heritage  
**2018** developed by research on characteristic lithotypes (<http://www.nanocathedral.eu/>). Responsible of research activities in Task 3.3 of WP3 (leader INSTM, Pisa)

## EDUCATION

**2016** **Ph.D. cum laude in Earth Science.** Thesis work: *Complex Pore Geometries in Natural Building Stones: an empirical and theoretical approach for the modeling of porosity changes in natural, degraded and treated calcarenites.* Tutor: Germana Barone, Paolo Mazzoleni. **Doctoral examination:** 28 January 2016.

**2012** **Post-graduate course “Scuola di Alti Studi in Economia del Turismo Culturale”,** Fondazione Edoardo Garrone, Comitato per la promozione di un Centro di Eccellenza in Economia del Turismo Culturale a Siracusa, Camera di Commercio Industria Artigianato e Agricoltura di Siracusa, Confindustria Siracusa, Consorzio Universitario Archimede, Comune di Siracusa e Regione Sicilia.

**2012** **M.A. in Earth Sciences,** University of Catania (Italy). **110/110 cum laude.** Thesis: “Multi-methodological approach for characterization of porous structures of natural stones. Fractal dimension of pore surfaces in Sicilian limestone used as building stones” Supervisors: Germana

## FULL CURRICULM VITAE

Barone, Paolo Mazzoleni.

**2009 B.A. Applied Technologies for Cultural Heritages** (Conservator Scientist), University of Catania (Italy). **110/110 cum laude**. Thesis: “Petro-archaeometric analysis on archaeological ceramics from underwater exploration in Siracusa. Case study on biofouling processes” Supervisors: Germana Barone, E. Aquilia, G. Alongi.

### LANGUAGE

- **Italian:** Native
- **English:** Fluent
  - o First Certificate in English. Cambridge University. 2006.

### MEMBERSHIP

**AIAr** (Italian Association of Archaeometry), since 2013

**SIMP** (Italian Association of Mineralogy and Petrology), since 2014

**SISN** (Italian Association of Neutron Spectroscopy), since 2014

**GABEC group** (National research group Geo-resources, Environment and Cultural Heritage), since 2016

**INTERPORE** (International Society for Porous Media), since 2017

**ANEDbc** (Associazione Nazionale Esperti Diagnostica Beni Culturali), since 2017. Position: regional contact for Tuscany.

### EXPERTISE

Thin section analysis (OM); Scanning electron microscopy (SEM-EDS); X-ray diffraction (XRD); X-ray fluorescence (XRF; laboratory and portable apparatus); ICP-MS and LA-ICP-MS; Raman spectroscopy (laboratory and portable apparatus); FT-IR Spectroscopy; Mercury Intrusion Porosimetry (MIP); nuclear magnetic resonance (NMR) and portable NMR; X-ray computed tomography ( $\mu$ -CT); neutron radiography and tomography; small angle neutron scattering (SANS); 3D surface digital microscope.

### AWARDS and FINANCIAL SUPPORT

- 2016** - **National Prize** bestowed by the Italian Society of Mineralogy and Petrology (SIMP) for the best Doctoral thesis in material science disciplines.
- 2015** - **Research grant** bestowed by Regione Siciliana in the framework of the program *Misura 3: Inserimento dottorandi e dottori di ricerca – Primo ciclo del Programma SICILIA FUTURO - ORGANISMO INTERMEDIO DELLA SOVVENZIONE GLOBALE DEL PO FSE SICILIA 2007-2013* for the development a research focused on archeometric studies of building stones and ancient plaster and mortars from the Adrano Castle, Sicily. Host Institution: Superintendence for Cultural Heritages of Catania. Supervisor: Arch. Nicola Francesco Neri.
- **National Prize “Angelo Bianchi”** bestowed by the Italian Society of Mineralogy and

## FULL CURRICULM VITAE

Petrology (SIMP) in honor of the scientific contribute to the Italian Mineralogical and Petrological Sciences.

- Financial support bestowed by SIMP for the attendance of the European Conference on Ancient Ceramics (EMAC 2015), Athens, 24-26/09/2015
- 2014** - **Financial support** for the attendance of S.G.I. & S.I.M.P 2014 Conference, Milan, Italy.
- 2013** - **Financial support** Sportello Giovani bestowed by AIAR (Italian Association of Archaeometry) for the development of a research project abroad. Research topic: Application of X-Ray micro/nanotomography in studying and modeling porous structure of natural building stones at UGCT Facility - Gent University. Gent, Belgium
- **Financial support** for the attendance of the 6<sup>th</sup> International Conference on Fractals and Dynamic Systems in Geosciences, Perugia, Italy.
- 2011** - **1<sup>st</sup> International Award** - University Festival of Art, Science and Technology, Siracusa, Italy.

### PARTECIPATION TO EXPERIMENTAL RESEARCHES ABROAD

- 2016** Experimental session at LLB, Saclay, France at the PAXI beamline (small angle neutron scattering).  
*Reference: Barone G, Mazzoleni P, Predieri G, Raneri S, Teixeira J. (2016). Investigation on suitability of consolidant and protective products on Sicilian calcarenite by using SANS. n. experiment 12441*
- 2014** Research stay at the Facility UGCT – Gent University (Belgium). Research project: Application of X-Ray micro/nanotomography in studying and modeling porous structure of natural building stones. 6<sup>th</sup> -17<sup>th</sup> May 2014. Supervisor: *Prof. Veerle Cnudde*
- 2014** Experimental session at ILL Grenoble, France at the D11 beamline (Small Angle Neutron Scattering). Data acquiring and processing by using SasView software. Supervisor: Ralf Schweins (Local contact D11 per ILL). ILL, 17<sup>th</sup> – 22<sup>nd</sup> September 2014. *Reference: Mariani G, Bassani F, Carducci F, Dall'orso S, Fuenzalida W, Juan P, Groehn F, Kutz A, Perinelli DR, Raneri S, Schweins R. (2014). Dendrimer-dye electrostatic self-assembly: a time-resolved SANS study. Institut Laue-Langevin (ILL) doi:10.5291/ILL-DATA.9-10-1366*

### OTHER RESEARCHES ABROAD

- 2015** Experimental session at LLB, Saclay, France at the IMAGE beamline (neutron radiography and tomography). *Reference: Barone G, Mazzoleni P, Predieri G, Rabot E, Raneri S, Teixeira J. (2015). Investigation on suitability of consolidant and protective products on Sicilian calcarenite by using neutron imaging. Laboratoire Leon Brillouin LLB, Cea-Saclay, France, n. experiment 12115*
- 2012** Experimental session at LLB, Saclay, France at the IMAGE beamline (neutron radiography and tomography). *Reference: Barone G, Mazzoleni P, Raneri S, Teixeira J. et al. (2012) 2D and 3D textural analysis of the effects of salt crystallisation induced degradation on limestones of interest in cultural heritage. Laboratoire Leon Brillouin LLB, Cea-Saclay (France).*

## FULL CURRICULM VITAE

### SCOLARSHIPS

- 2017** - **Short Course: Micro Computed Tomography**, at the 9<sup>th</sup> International Conference on Porous Media & Annual Meeting held in Delft (Netherlands) on May 12 2017.
- 2014** - **GD-SISN School** - Neutron applications in Physic, Chemistry, Biology and Geology. San Giovanni in Valle Aurina (Bz, Italy) and ILL Grenoble (Francia), 13-22/09/2014.
- **GABEC&GNM International School 2014** – Innovative methodologies for the characterization, diagnosis and conservation of the Cultural Heritages, Catania-Siracusa, 1-4/07/2014.
- 2011** **Advanced course in “Restoration of ancient books”**, Istituto Italiano di Cultura all’Estero - Cairo (Egypt), 9-13 January 2011.

### INTERNSHIP ACTIVITIES

- 2015** Internship activity at the NMR Laboratory of IMC – CNR Rome (Italy). Research topic: **Investigation of pore structure of building stones by using portable-NMR devices**. Supervisor: Dr. *Prof. Donatella Capitani*. 16-21 March 2015.
- 2013** - Internship activity at the University of Parma (Italy) – Department of Physic and Earth Sciences. Research topic: **Micro-Raman application on gemstones**. 3-14 June 2013. Tutor: *Danilo Bersani*
- Internship activity at the University of Parma (Italy) – Department of Chemistry. Nanotechnologies for Cultural Heritages. Research topic: **Synthesis and application of TiO<sub>2</sub> nano-sol on building stones**. Tests on photocatalytic activity. 3-14 June 2013. Tutor: *Giovanni Predieri*
- 2010** Internship activity at the University of Calabria, Department of Earth Science, ICP-MS Laboratory. Research topic: Trace element determination of rock samples by using ICP-MS and study of obsidian by using LA-ICP-MS. Tutor: *Donatella Barca*.
- 2008** **Training in underwater exploration by using echo sounders**. Marine archaeology. Surveys at the harbor of Siracusa (Italy) under the supervision of AURORA Trust Foundation (USA) and Pharos s.a.s (Italy), in collaboration with LegaNavale Italiana (Siracusa) and Sicilian Sea Superintendence. 22<sup>nd</sup> of September - 10<sup>th</sup> of October.

### TEACHING EXPERIENCES

- 2017-2018** **Lecturer of Applied Mineralogy** at the **MS in Earth Sciences and Technologies** at the **University of Pisa (Italy)**.
- 2013-2015** Teaching activity and research seminar to Master’s degree students in earth Sciences at the University of Catania – Department of Biological, Geological and Environmental Sciences in the framework of Ph.D. course.

## FULL CURRICULM VITAE

- 2013-2015** Co-supervisor in several M.A. and B.A. thesis works.
- 2012** Research seminar: A multi-methodological approach for the determination of the porous structure of building stones. Fractal geometries in complex pore systems. GaBeC 2012. Rome (Italy), 21<sup>st</sup> of September, 2012.
- 2011** Teaching activity on “Rocks and Earth Sciences” to undergraduates students. University of Catania – Department of Biological, Geological and Environmental Sciences.
- 2010/2011** Tutor for the course in Applied petrography – Bachelor’s Studies in Applied Technologies for Cultural Heritages, University of Catania, Siracusa (Italy).

### **REVIEWER**

Reviewer for the *Journal of Archaeological Science*(JAS) <http://www.journals.elsevier.com/journal-of-archaeological-science/>

Reviewer for the *Journal of Cultural Heritage (CULHER)* <https://www.journals.elsevier.com/journal-of-cultural-heritage/>

Reviewer for *Periodico di Mineralogia*<http://periodicodimineralogia.it/index.php/mineralogia>

Reviewer for the *Bulletin of Engineering Geology and the Environment*

<http://www.springer.com/earth+sciences+and+geography/engineering+geology/journal/10064>

### **EXPERIENCE IN THE ORGANIZATION OF CONFERENCES**

- 2018** Member of Organizing Committee for the XIII GeoRaman Conferences, Catania, 10-14 June 2018.
- 2016** Student Helper for the 2<sup>nd</sup> European Mineralogical Conference (Rimini, Italy 11 - 15 September 2016). Minerals, rocks and fluids: alphabet and words of planet Earth
- 2015** Member of the Organization Committee of the *National Conference “Diamonds and Colored Gems”* since 2016.

### **INVITED SPEAKER**

- 2017** Key note lecture at the SIMP-SGI-SOGEI-AVI Conference, Geosciences: : a tool in a changing world” with a contribute entitled “Effectiveness, compatibility and durability of consolidants for marble: a review of the last ten year of researches”, Pisa, 05.09.2017.
- 2017** Public workshop: *The Nano-Cathedral Project* (Grant Agreement No 646178) at the University of Catania, Department of Biological, Geological and Environmental Sciences. 06.04.2017
- 2017** 5<sup>th</sup> Technical Meeting *Nano-Cathedral Project* (Grant Agreement No 646178), Olso (Northway), 7-8 June 2017 as **responsible of some research activities in Task 3.3 in WP3.**

The undersigned authorizes to handle her personal data within the meaning of Italian D.Lgs. 196/03

## PUBLICATION LIST

### *Journals articles (peer reviewed)*

1. G. Barone, M. Di Bella, M.A. Mastelloni, P. Mazzoleni, S. Quartieri, **S. Raneri**, G. Sabatino (2017) Pigments characterization of polychrome vases production at Lipára: new insights by non-invasive spectroscopic methods, *Journal: X-Ray Spectrometry*, DOI: 10.1002/xrs.2810
2. G. Barone, D. Bersani, P. Mazzoleni, S. Raneri (2017) Portable XRF: a tool for the study of corundum gems, *Open Archeology*, 3, 196–203.
3. M. Lezzerini, **S. Raneri**, M. Nutarelli, L. Luti (2017), Conservation of cultural stones: relationship among texture, thermal ageing and consolidation strategies in white Apuan marbles, *J Mineral, Metal and Material Engineering*, *in press*.
4. G. Barone, D. Bersani, P. Mazzoleni, **S. Raneri**, Portable XRF: a tool for the study of corundum gems, *Open Archeology*, *accepted with minor revisions*.
5. **S. Raneri**, G. Barone, P. Mazzoleni, I. Alfieri, L. Bergamonti, T. De Kock, V. Cnudde, P.P. Lottici, A. Lorenzi, G. Predieri, E. Rabot, J. Teixeira (2017) Efficiency assessment of hybrid coatings for natural building stones by advanced and multi-scale analytical techniques, *Applied Surface Science*, *submitted*.
6. G. Barone, M. Di Bella, M.A. Mastelloni, P. Mazzoleni, S. Quartieri, S. Raneri, G. Sabatino (2017) Pigments characterization of polychrome vases production at Lipára: new insights by non-invasive spectroscopic methods, *X-Ray spectrometry*, *submitted*.
7. G. Barone, P. Mazzoleni, **S. Raneri**, G. Spagnolo, A. Santostefano (2017) Coroplastic art in Sicily: an investigation on provenance and manufacturing technology of Greek architectural terracottas from Gela (Italy). *Mediterranean Archaeology and Archaeometry*, 17, 89-101
8. G. Barone, R. Chowanec, M. Fituła, P. Mazzoleni, L. Mirabella, **S. Raneri** (2016) Pottery production during "romanization" of Sicily: an archaeometric study of plain table-ware classes from ancient Akrai (Sicily), *Mediterranean Archaeology and Archaeometry*, 16, DOI: 10.5281/zenodo.160964
9. G. Barone, R. Chowanec, S. Mangioni, P. Mazzoleni, **S. Raneri** (2016) Evaluation of the technological features of late roman cooking ware classes from Akrai (Syracuse, Sicily), *Mediterranean Archaeology and Archaeometry* 16, DOI:10.5281/zenodo.160965
10. **S. Raneri** (2016) Complex pore geometries in natural building stones: an experimental and theoretical approach for the modeling of porosity changes in natural, degraded and treated calcarenites, *PLINIUS* n. 42, DOI: 10.19276/plinius.2016.01010
11. P. Mazzoleni, G. Barone, **S. Raneri**, E. Aquilia, D. Bersani, R. Cirrincione (2016) Application of micro-Raman spectroscopy for the identification of unclassified minerals preserved in old museum collections, *PLINIUS* n. 42, DOI: 10.19276/plinius.2016.02015
12. G. Barone, D. Bersani, A. Coccato, D. Lauwers, P. Mazzoleni, **S. Raneri**, P. Vandenabeele, D. Manzini, G. Agostino, N. F. Neri (2016) Non-destructive Raman investigation on wall paintings at Sala Vaccarini in Catania (Sicily), *Applied Physics A*, 122: 838. doi:10.1007/s00339-016-0370-7.
13. **S. Raneri**, G. Barone, P. Mazzoleni, E. Rabot (2016) Visualization and quantification of the weathering effects on capillary water uptake of natural building stones by using neutron imaging, *Applied Physics A*, 122: 969.



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doi:10.1007/s00339-016-0495-8.

14. G. Barone, P. Mazzoleni, **S. Raneri**, D. Bersani, J. Jehlička, P. P. Lottici, P. Vandenabeele, G. Lamagna, A. M. Manenti (2016) Raman investigation on precious jewelry collections preserved in Paolo Orsi Regional Museum (Siracusa, Sicily) by using portable equipment, *Applied Spectroscopy*, DOI: 10.1177/0003702816662592.
15. G. Barone, D. Capitani, P. Mazzoleni, N. Proietti, **S. Raneri**, U. Longobardo, V. Di Tullio (2016) <sup>13</sup>C solid State NMR and  $\mu$ -Raman Spectroscopic Characterization of Sicilian Amber, *Applied Spectroscopy*, DOI: 10.1177/0003702816654087
16. G. Barone, D. Bersani, P. P. Lottici, P. Mazzoleni, **S. Raneri**, U. Longobardo (2016) Red gemstone characterization by micro-Raman spectroscopy: the case of rubies and their imitations, *J. Raman Spectroscopy*, DOI: 10.1002/jrs.4919
17. Barone G, Mazzoleni P, Pappalardo G, **Raneri S** (2015) Microtextural and microstructural influence on the changes of physical and mechanical properties related to salts crystallization weathering in natural building stones. The example of Sabucina stone (Sicily), *Construction and Building Materials*, 95, 355-365. DOI: 10.1016/j.conbuildmat.2015.07.131
18. Aquilia E, Giuffrida A, Ingoglia C, Mazzoleni P, **Raneri S** (2015): Archeometric investigation on wall paintings from the most ancient Hellenistic hypogeum found in Sicily (C.da Apaforte - Licata (AG)). *Rendiconti Lincei*. DOI: 10.1007/s12210-015-0419-0
19. Bergamonti L, Alfieri I, Lorenzi A, Predieri G, Barone G, Gemelli G, Mazzoleni P, **Raneri S**, Bersani D, Lottici PP (2015): Nanocrystalline TiO<sub>2</sub> coatings by sol-gel: photocatalytic activity on Pietra di Notobicalcarenite. *Journal of Sol-Gel Science and Technology*. 10.1007/s10971-015-3684-6
20. Aquilia E, Barone G, Mazzoleni P, **Raneri S**, Lamagna G (2015): Petro-archaeometric characterization of potteries from a kiln in Adrano, Sicily. *Heritage Science* 12. 3:11. DOI: 10.1186/s40494-015-0043-4
21. **Raneri S**, Barone G, Crupi V, Longo F, Majolino D, Mazzoleni P, Tanasi D, Teixeira J, Venuti V (2015): Technological analysis of Sicilian prehistoric pottery production through small angle neutron scattering technique. *Periodico di Mineralogia* 84, 1, 1-22. DOI: 10.2451/2015PM0001
22. **Raneri S**, Barone G, Mazzoleni P, Tanasi D, Costa E (2015): Mobility of men versus mobility of goods: archaeometric characterization of Middle Bronze Age pottery in Malta and Sicily (15th-13th century BC). *Periodico di Mineralogia*, 84, 1, 23-44. DOI: 10.2451/2015PM0003.
23. Barone G, Gullì D, Mazzoleni P, **Raneri S**, Tanasi D (2015): Archaeometric identification of Maltese imports in prehistoric Sicily: Żebbuġ phase pottery from Licata-Caduta (Agrigento). *Malta Archaeological Review*, 2010–2011, Issue 10 23-30
24. **Raneri S**, Cnudde V, De Kock T, Derluyn H, Barone G, Mazzoleni P (2015): X-ray computed microtomography to study the porous structure and degradation processes of a building stone from Sabucina (Sicily). *European Journal of Mineralogy*. doi: 10.1127/ejm/2015/0027-2433
25. Barone G, Bersani D, Jehlička J, Lottici PP, Mazzoleni P, **Raneri S**, Vandenabeele P, Di Giacomo C, Larinà G (2014): Non Destructive Investigation On The 17th/18th Century Sicilian Jewellery Collection At The Messina Regional Museum Using Mobile Raman Equipment. *Journal Raman Spectroscopy*. DOI: 10.1002/jrs.4649.
26. Bersani B, Azzi G, Lambruschi E, Barone G, Mazzoleni P, **Raneri S**, Longobardo U, Lottici PP (2014):

## PUBLICATION LIST

Characterization of emeralds by micro-Raman spectroscopy. *Journal of Raman Spectroscopy*, 45, 1293–1300. doi: 10.1002/jrs.4524

27. Barone G, Bersani D, Crupi V, Longo F, Longobardo U, Lottici PP, Aliatis I, Majolino D, Mazzoleni P, **Raneri S**, Venuti V (2014): A portable vs. micro-Raman equipment comparison for gemmological purposes: the case of sapphires and their imitations. *Journal of Raman Spectroscopy*, 45, 1309-1317. doi: 10.1002/jrs.4555.
28. Barone G, Crupi V, Longo F, Majolino D, Mazzoleni P, **Raneri S**, Teixeira J, Venuti V (2014): Neutron radiography for the characterization of porous structure in degraded building stones. *Journal Instrumentation*, 9, C05024. doi:10.1088/1748-0221/9/05/C05024
29. Barone G, Crupi V, Longo F, Majolino D, Mazzoleni P, **Raneri S**, Teixeira J, Venuti V (2014): A multi-technique approach for the determination of the porous structure of building stone. *European Journal of Mineralogy*, 26, 189-198. doi: 10.1127/0935-1221/2014/0026-2355
30. Barone G, Crupi V, Longo F, Majolino D, Mazzoleni P, **Raneri S**, Venuti V (2013): A multi-technique approach for the characterization of decorative stones and non-destructive method for the discrimination of similar rocks. *X-Ray Spectrometry*, 43, 83-91. doi: 10.1002/xrs.2520.
31. Barone G, Bruno N, Giuffrida A, Mazzoleni P, **Raneri S** (2013): Archaeometric investigation of Late Roman marble statue from Kaucana (RG): new perspectives on the diffusion of Thassos marble in Sicily. *Periodico di Mineralogia*, 82, 305-321.
32. Agostino R, Barone G, Mazzoleni P, **Raneri S**, Sabatino G, Sica MM (2013): Mortars and plasters from the Bruttii - Roman city of Tauriana (Palmi - RC) - preliminary data. *Periodico di Mineralogia*, 82, 489-501.

### **Book chapters**

1. Barone G, Mazzoleni P, **Raneri S**, Tanasi D, Giuffrida A: *Archaeometric characterization of Middle Bronze Age pottery from Borg in-Nadur village*, in D. Tanasi, N. C. Vella (eds.), *The late prehistory of Malta: essays on Borg in-Nadur and other sites*, Midsea Books, Malta, 2014.
2. Barone G, Chowanieck R, Fitula M, Mazzoleni P, **Raneri S**: *Petro-archaeometric characterization of archeological ceramics from Akrai*, in Chowanieck R (eds), *Unveiling the Past of an Ancient Town. Akrai/Acrea in south-eastern Sicily*, 2015.

### **Extended abstracts**

1. Barone G, Bersani D, Jehlicka J, Lottici PP, Mazzoleni P, **Raneri S**, Vandenabeele P. Fast on-site identification of minerals by using portable Raman equipment in gemmological trade contexts and in collectors exhibitions. *Periodico di Mineralogia - ECMS 2015*, 208, 27-28.
2. Mazzoleni P, Barone G, Aquilia E, Bersani D, Cirrincione R, **Raneri S**. Potentiality of micro-Raman spectroscopy for the identification of unclassified minerals preserved in old museum collections. *Periodico di Mineralogia - ECMS 2015*, 208, 117-118.
3. Barone G, Bersani D, Lottici PP, Mazzoleni P, **Raneri S**, Longobardo U. Application of micro-Raman spectroscopy for gemstones characterization. The case of rubies, VIII Congresso Nazionale di Archeometria Scienze e Beni Culturali: stato dell'arte e prospettive, Bologna 5 - 7 Febbraio 2014.

## PUBLICATION LIST

4. Aquilia E, Barone G, Mazzoleni P, **Raneri S**, Lamagna G. Petro-archaeometric characterization of kiln pottery wastes from Adrano, Sicily, VIII Congresso Nazionale di Archeometria Scienze e Beni Culturali: stato dell'arte e prospettive, Bologna 5 - 7 Febbraio 2014.
5. Barone G, Ciliberto E, Corsaro RA, Costagliola P, Di Benedetto F, Mazzoleni P, Miraglia L, Gimeno D, **Raneri S**. The effects of volcanic ashes on the environment and health: first data on Mt. Etna case study, FIST Geitalia 2013, 15-18 September, Pisa (Italy).
6. Barbera G, Barone G, Crupi V, Longo F, Majolino D, Mazzoleni P, **Raneri S**, Venuti V. Multi-scale spectroscopic analysis on precious stones, 31<sup>st</sup> European Congress of Molecular Spectroscopy, 26 - 31 Agosto, 2012, Cluj-Napoca, Romania. ISBN: 978-973-647-912-0. pp. 351

### *Conference papers*

1. S. Raneri, G. Barone, M. Lezzerini, P. Mazzoleni, F. N. Neri, Mapping building materials and alteration forms to diagnosis, conservation and restore: a Norman castle in Sicily, Defensive Architecture of the Mediterranean. XV to XVIII centuries / Vol V / Echarri Iribarren (Ed.), 2017 Editorial Universitat Politècnica de Valencia.
2. Aquilia E, Barone G, Bruno N, Mazzoleni P, **Raneri S**, Tusa S. Caratterizzazione di ceramiche archeologiche subacquee dal porto piccolo di Siracusa, VI Congresso Nazionale di Archeometria "Scienza e Beni Culturali". Pavia, 15-18 febbraio 2010. ISBN 978-88-555-3181-8. Pag. 1-6
3. **Raneri S**, Greco E. Use of echosounders in marine archaeology: survey of harbor in Syracuse, Youth in Conservation of Cultural Heritage. Roma, 24-25 November 2008. ISBN: 978-88-86208-59-8. Pag. 282-287

## **CONFERENCES ATTENDED**

### **2017 • Oral presentation**

- 1) G. Barone, P. Mazzoleni, **S. Raneri**, M. Lezzerini, B. Campanella, E. Grifoni, S. Legnaioli, G. Lorenzetti, S. Pagnotta, F. Poggialini, V. Palleschi, U. Longobardo, Laser Induced Breakdown Spectroscopy (LIBS) for gemological testing: the case of corundum gems, 9<sup>th</sup> Euro-Mediterranean Symposium on LIBS (9<sup>th</sup> EMSLIBS), 11-16/06/2017, Pisa (Italy)
- 2) **S. Pagnotta**, S. Raneri, M. Lezzerini, M. Tamponi, B. Campanella, E. Grifoni, S. Legnaioli, G. Lorenzetti, F. Poggialini, V. Palleschi, Accuracy and precision improvement of Laser Induced Breakdown Spectroscopy (LIBS) by geostandards, 9<sup>th</sup> Euro-Mediterranean Symposium on LIBS (9<sup>th</sup> EMSLIBS), 11-16/06/2017, Pisa (Italy)
- 3) **S. Columbu**, S. Carboni, M. Lezzerini, S. Pagnotta, S. Raneri, S. Legnaioli, V. Palleschi, Chemical-mineralogical alteration and ancient treatments of limestone from Monte Prama nuraghic statues (Sardinia, Italy), 9<sup>th</sup> Euro-Mediterranean Symposium on LIBS (9<sup>th</sup> EMSLIBS), 11-16/06/2017, Pisa (Italy)
- 4) G. Barone, D. Capitani, V. Di Tullio, M. Lezzerini, P. Mazzoleni, N. Proietti, **S. Raneri**,

## PUBLICATION LIST

Exploring weathering process in natural building stones by portable NMR, *INTEPORE2017, 9<sup>th</sup> International Conference on Porous Media & Annual Meeting, May 8 - 11, 2017, Rotterdam, Netherlands*

### • Poster presentation

- 1) M. Lezzerini, F. Cantini, **S. Raneri**, R. Belcari, S. Pagnotta, G. Lorenzetti, S. Legnaioli, V. Palleschi, Mural painting in Tuscany during the Middle Age: a spectroscopic investigation on pigments and painting technique, *Colloquium Spectroscopicum Internationale (CSI) XL, 11-16/06/2017, Pisa (Italy)*
- 2) **S. Raneri**, F. Cantini, V. Palleschi, S. Legnaioli, S. Pagnotta, G. Lorenzetti, M. Lezzerini, Decorative stones characterization through spectroscopic methods: mosaic tesserae from an outstanding late Roman villa in Tuscany, *Colloquium Spectroscopicum Internationale (CSI) XL, 11-16/06/2017, Pisa (Italy)*
- 3) G. Barone, D. Bersani, P. Mazzoleni, **S. Raneri**, M. Lezzerini, U. Longobardo, Portable XRF: a tool for the study of corundum gems, *CONVEGNO Tematico AIAr Beni Culturali: grandi facilities, reti e networks di laboratori Firenze, 8 – 10 Marzo 2017*
- 4) E. Aquilia, G. Barone, M. Benvenuti, R. A. Corsaro, G. Gangemi, P. Mazzoleni, M. Lezzerini, F. Passalacqua, **S. Raneri**, C. Vailati, Diagnosis and conservation by using portable equipment: the case of St. Maria Cathedral in Randazzo (Sicily), *CONVEGNO Tematico AIAr Beni Culturali: grandi facilities, reti e networks di laboratori Firenze, 8 – 10 Marzo 2017*
- 5) A. Lazzeri, M.B. Coltelli, M. Lezzerini, **S. Raneri**, V. Castelvetro, L. Toniolo, F. Gherardi, O. Chiantore, L. Festa, I. Vicini, E. Ghaffari, J. Weber, M. Ban, A. Rohatsch, R. Fischer, R. Drewello, European Project NANO-CATHEDRAL: Nanomaterials for conservation of European architectural heritage developed by research on characteristic lithotypes, *CONVEGNO Tematico AIAr Beni Culturali: grandi facilities, reti e networks di laboratori Firenze, 8 – 10 Marzo 2017*
- 6) A. Lazzeri, M.B. Coltelli, M. Lezzerini, **S. Raneri**, V. Castelvetro, L. Toniolo, F. Gherardi, O. Chiantore, L. Festa, I. Vicini, E. Ghaffari, J. Weber, M. Ban, A. Rohatsch, R. Fischer, R. Drewello, European Project NANO-CATHEDRAL. Efficacy assessment of nanomaterials for conservation of natural stones: the impact of pore structure in selecting appropriate conservative treatments, *INTEPORE 2017, 9<sup>th</sup> International Conference on Porous Media & Annual Meeting, May 8 - 11, 2017, Rotterdam, Netherlands*

### 2016 • Oral presentation

- 1) Barone G., Di Bella M., Mastelloni M.A., Mazzoleni P., Quartieri S., **Raneri S.**, Sabatino G., Vailati C.: Pottery production of the Pittore di Lipari: chemical and mineralogical analysis of the pigments, *EMC2016 – 2<sup>nd</sup> European Mineralogical Conference - Rimini, September 11<sup>th</sup> - 15<sup>th</sup>*

### • Poster presentation

## PUBLICATION LIST

1) Barone G., Bersani D., Lottici P.P., Mazzoleni P., **Raneri S.**, Colored gems: a review on non destructive and non invasive approaches in art and gemology, *EMC2016 – 2<sup>nd</sup> European Mineralogical Conference - Rimini, September 11<sup>th</sup>- 15<sup>th</sup>*

2) Barone G., Mazzoleni P., Monterosso G., **Raneri S.**, Santostefano A., Spagnolo G., Exploring the coroplasts “*techne*” in Greek architectural terracottas: an archaeometric approach, *EMC2016 – 2<sup>nd</sup> European Mineralogical Conference - Rimini, September 11<sup>th</sup>- 15<sup>th</sup>*

3) Barone G., Mazzoleni P., Rabot E., **Raneri S.**, Visualization and quantification of weathering effects and water uptake processes in natural building stones by using neutron imaging, *International Conference on Innovation in Art Research and Technology, INART 2016, Gent (Belgium)*.

4) G. Barone, D. Bersani, A. Coccato, D. Lauwers, P. Mazzoleni, **S. Raneri**, P. Vandenaabeele, D. Manzini, G. Agostino, N. F. Neri, Non-destructive Raman investigations on wall paintings at Sala Vaccarini in Catania (Sicily), *International Conference on Innovation in Art Research and Technology, INART 2016, Gent (Belgium)*.

### 2015 • Oral presentation:

1) G. Barone, P. Mazzoleni, **S. Raneri**, G. Spagnolo, A. Santostefano, Coroplastic art in Sicily: an investigation on provenance and manufacturing technology of the Greek architectural terracottas from Gela (Italy), *13<sup>th</sup> European Meeting on Ancient Ceramics, EMAC2015, Athens, September 24-26, 2015*.

### • Poster presentation:

1) Barone G., Mazzoleni P., Pappalardo G., **Raneri S.**, Changes on physical and mechanical properties related to salts crystallization weathering in natural building stones: effects of microtextural and microstructural features, *7<sup>th</sup> International Conference on Porous Media & Annual Meeting, INTERPORE 2015, May 18 - 21, 2015, Padova, Italy*.

### 2014 • Oral presentation:

1) Barone G., Bersani D., Longobardo U., Lottici P. P., Mazzoleni P., **Raneri S.**, Application of micro-Raman Spectroscopy for the characterization of rubies, *Congresso Congiunto della Società Geologica Italiana (SGI) e della Società Italiana di Mineralogia e Petrografia (SIMP) – Milano 10 – 12 settembre 2014*.

2) Alfieri I., Barone G., Bergamonti L., Lorenzi A., Lottici P. P., Mazzoleni P., Predieri G., **Raneri S.**, Nanostructured coating and innovative organic-inorganic consolidant: efficiency tests on a calcarenite from Sabucina (Sicily), *Congresso Congiunto della Società Geologica Italiana (SGI) e della Società Italiana di Mineralogia e Petrografia (SIMP) – Milano 10 – 12 settembre 2014*.

3) Barone G., Bersani D., Lottici P.P., Mazzoleni P., **Raneri S.**, Longobardo U., Application of micro-Raman spectroscopy for gemstones characterization. The case of rubies, *VIII Congresso Nazionale di Archeometria Scienze e Beni Culturali: stato dell'arte e prospettive, Bologna 5 - 7 Febbraio 2014*

## PUBLICATION LIST

### • Poster presentation:

1) Barone G., Ingoglia C., Mazzoleni P., **Raneri S.**, Aquilia E., Archeometric study of the more ancient painted wall found in Sicily (Apaforte – Licata), *Congresso Congiunto della Società Geologica Italiana (SGI) e della Società Italiana di Mineralogia e Petrografia (SIMP) – Milano 10 – 12 settembre 2014.*

2) Aquilia E., Barone G., Mazzoleni P., **Raneri S.**, Lamagna G., Petroarchaeometric characterization of kiln pottery wastes from Adrano, Sicily, *VIII Congresso Nazionale di Archeometria Scienze e Beni Culturali: stato dell'arte e prospettive, Bologna 5 - 7 Febbraio 2014.*

### 2013 • Poster presentation:

1) Barone G., Crupi V., Longo F., Majolino D., Mazzoleni P., **Raneri S.**, Tanasi D., Venuti V., Application of fractal models to ancient ceramics: structural and technological aspects, *6th International Conference on Fractals and Dynamic Systems in Geosciences, 30 Sept. – 02 Oct. 2013, Perugia (Italy).*

2) Barone G., Crupi V., Longo F., Majolino D., Mazzoleni P., **Raneri S.**, Tanasi D., Venuti V., Technological analysis of Sicilian prehistoric pottery production through small angle neutron scattering technique, *12th European Meeting on Ancient Ceramics EMAC 2013, 19-21 September, Padova, Italy*

3) Barone G., Costa E., Mazzoleni P., **Raneri S.**, Tanasi D., Maltese pottery in Middle Bronze Age Sicily (15th-13th century BC). A distinction between imports and local products on petroarchaeometric base, *12th European Meeting on Ancient Ceramics EMAC 2013, 19-21 September, Padova, Italy*

4) Barone G., Bersani D., Crupi V., Longo F., Longobardo U., Majolino D., Mazzoleni P., **Raneri S.**, Venuti V., Raman Spectroscopy as useful tool for the gemmological certification and provenance determination of sapphires, *7th International Congress on the Application of Raman Spectroscopy in Art and Archaeology RAA 2013, September 2-6, Ljubljana, Slovenia*

5) G. Barone, V. Crupi, F. Longo, D. Majolino, P. Mazzoleni, **S. Raneri**, J. Teixeira, V. Venuti, Neutron radiography for the characterization of porous structure in degraded building stones, *15th International Workshops on Radiation Imaging Detectors IWORID2013, June 23-27, Paris.*

6) La Spada F., Limpido D., **Raneri S.**, Barone G., Mazzoleni P., 3D graphic for promoting Cultural Heritage. The archaeological site of Petraro in Villasmundo (Mellilli, Sicily), *ARCHEOFOSS 2013, 18-19 July, Catania (Italy)*

## CO-AUTHOR OF OTHER CONFERENCE CONTRIBUTES

### 2017 • Poster presentation

1) G. Barone, L. Bergamonti, D. Bersani, L. Fornasini, U. Longobardo, P. Mazzoleni, S. Raneri, P. P.

## PUBLICATION LIST

Lottici, Potentiality of Raman spectroscopy for pearls characterization and authentication, TECHNART 2017, Non-destructive and microanalytical techniques in art and cultural heritage Bilbao, May 2 - 6, 2017

- 2) E. Grifoni, S. Legnaioli, M. Lezzerini, G. Lorenzetti, S. Pagnotta, V. Palleschi, S. Raneri, Micro-chemical evaluation of ancient potsherd by mean of Micro-Libs-Scanning on thin section negatives, TECHNART 2017, Non-destructive and microanalytical techniques in art and cultural heritage Bilbao, May 2 - 6, 2017

### 2016 • Poster presentation:

- 1) G. Barone, P. P. Lottici, P. Mazzoleni, G. Predieri, S. Raneri, J. Teixeira, Investigation on suitability of consolidant and protective products on Sicilian calcarenites using Small Angle Neutron Scattering, *XXVII Congresso Annuale SISN – Italian Neutron Scattering Conference*, Ancona-Senigallia 29 June – 1 July 2016.

### 2015 • Oral presentation:

- 1) Barone G, Bersani D, Jehlicka J, Lamagna G, Lottici PP, Manenti AM, Mazzoleni P, Raneri S, Vandenaabeele P., Non destructive investigation on Greek and Roman jewelry collection at the Paolo Orsi Regional Museum in Siracusa using mobile Raman equipment, TECHNART 2015, Catania 27-30 April 2015.

#### • Poster presentation:

- 1) Aquilia E., Barone G., Cirrincione R., Mazzoleni P., Raneri S., Bersani D., Potentiality of Raman Spectroscopy for the identification of unclassified minerals preserved in old Museum collections, 8th European Conference on Mineralogy and Spectroscopy, ECMS 2015, Rome, Italy, September 9-11, 2015.
- 2) G. Barone, D. Bersani, J. Jehlička, P. Mazzoleni, S. Raneri, P. Vandenaabeele, Fast on-site identification of minerals by using portable Raman equipment in gemmological trade contexts and in collectors exhibitions, 8th European Conference on Mineralogy and Spectroscopy, ECMS 2015, Rome, Italy, September 9-11, 2015.
- 3) G. Barone, D. Bersani, P.P. Lottici, P. Mazzoleni, S. Raneri, U. Longobardo, Red gemstones characterization by using micro-Raman spectroscopy. Identification, genesis and treatments in rubies and their imitations, 8th Congress on Application of Raman Spectroscopy in Art and Archaeology, RAA 2015, Wrocław (Poland), 1-5 September 2015
- 4) Di Tullio V, Barone G, Capitani D, Proietti N, Mazzoleni P, Raneri S, Giuffrida A, Multiscale porosimetric description of pore network in building stones, TECHNART 2015, Catania 27-30 Aprile 2015.
- 5) Proietti N, Barone G, Capitani D, Di Tullio V, Mazzoleni P, Raneri S, Longobardo U, Analysis of Sicilian Amber by <sup>13</sup>C Solid state NMR and Raman Spectroscopy, TECHNART 2015, Catania 27-30 Aprile 2015.

### 2014 • Poster presentation:

## PUBLICATION LIST

- 1) Alfieri I., Barone G., Bergamonti L., Lorenzi A., Lottici P. P., Mazzoleni P., Predieri G., Raneri S., Self-cleaning photocatalytic coating and hybrid organic-inorganic strengthen products for the protection and conservation of calcarenites from Sabucina (Italy, Sicily), IMA 2014, South Africa
- 2) Barone G., Bersani D., Jehlička J., Lottici P. P., Mazzoleni P., Raneri S., Vandenaabee P., Di Giacomo C., Larinà G., Non Destructive Investigation On The 17th/18th Century Sicilian Jewellery Collection At The Messina Regional Museum Using Mobile Raman Equipment, 11th International GeoRaman Conference, June 15-19, St. Louis, MO, USA
- 3) Agostino R., Barone G., Mazzoleni P., Raneri S., Sabatino G., Sica M. M., Mortars and plasters from the Bruttii - Roman city of Tauriana (Palmi - RC) - preliminary data, Conference on Ancient and Modern Mortars AMMC 2013, 7-8 Febbraio, Firenze, Italia
- 4) G. Barbera, G. Barone, V. Crupi, F. Longo, D. Majolino, P. Mazzoleni, S. Raneri, V. Venuti, Multi-scale spectroscopic analysis on precious stones, 31st European Congress of Molecular Spectroscopy, 26 - 31 Agosto, 2012, Cluj-Napoca, Romania. ISBN: 978-973-647-912-0. Pag. 351



## RESEARCH INTERESTS

*Archeometry*: archaeometric characterization of ancient ceramics, plasters and mortars, pigments and wall paintings, glass, gems and jewelry collections.

*Natural Building Stones*: porosity modeling of natural building stones; fractal geometry; non destructive and non invasive methods for the characterization of inner structure of stones (X-ray and neutron imaging; Nuclear Magnetic Resonance; Small Angle Neutron Scattering); laboratory tests following standard recommendations (UNI, UNIEN, Normal).

*Nanotechnologies for Cultural Heritages*: photocatalytic TiO<sub>2</sub>nano-sol for the protection of building stones; nanostructured coating for the preservation of building stones materials; hybrid organic-inorganic consolidants; efficacy tests on innovative products for conservation and preservation of cultural stones.