

CURRICULUM VITAE et STUDIORUM

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EDUCATION

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| 2001 | Ph.D. in Mineralogy, Petrology and Crystallography, University of Pavia, Italy |
| 1997 | Chemistry Degree (110/110 <i>summa cum laude</i>), University of Pavia, Italy |

PROFESSIONAL EXPERIENCES

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| 2006-present | Researcher and Lecturer at University of Pavia |
| 2008-present | Associate Researcher at the Institute of Geosciences and Georesources of Italian National Research Council (CNR) |
| 2007 | Invited Visiting Scientist (3 months) at the Department of Mineralogy, South Australian Museum, Adelaide, Australia |
| 2004-2005 | Post-doc, University of Pavia, Italy |
| 2003-2004 | Post-doc, University of Cambridge, UK |
| 2001-2003 | Post-doc, University of Pavia, Italy |
| 1997-2000 | Ph.D., University of Pavia, Italy |

NATIONAL SCIENTIFIC QUALIFICATIONS

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| 2014 | National Scientific Qualification for Associate Professor in “Geochemistry, mineralogy, petrology, volcanology, georesources and applications” |
| 2002 | Italian State Exam certification in Chemistry |

AWARDS AND GRANTS

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| 2008 | Nardelli Prize for outstanding young crystallographer issued by the Italian Crystallographic Association (AIC) |
| 2007 | SIMP (Italian Society for Mineralogy and Petrology) grant for research activity abroad |
| 2003 | Accademia Nazionale dei Lincei - Royal Society grant |
| 2003 | CNR-NATO grant |

TEACHING ACTIVITIES

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| 2006-present | Lecturer of “Crystallography” and “Mineralogy” for the Chemistry degree
Lecturer of “Minerals and Advanced Materials” for the Geology degree
Supervisor of undergraduate and PhD students |
| 2017 | Erasmus+ Teaching Staff Mobility, University of Zagreb, Croatia |

INVITED LECTURES, TALKS AND SEMINARS

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| 2016 | Key-note talk: IV MISCA, Tenerife, Spain |
| 2016 | Invited lecture: IUCr-UNESCO OpenLab Uruguay, Montevideo, Uruguay |
| 2016 | Invited lecture: IUCr-UNESCO OpenLab Cambodia, Phnom Penh, Cambodia |
| 2016 | Invited lecture: AIC-SIMP International School, Rimini, Italy |
| 2015 | Invited seminar: University of Bari, Italy |
| 2012 | Key-note talk: European Crystallographic Meeting, ECM27, Bergen, Norway |
| 2011 | Invited lecture: AIC International School “Crystallography Beyond Diffraction”, Camerino, Italy |
| 2009 | Key-note talk: XXXVIII Congresso AIC, Salerno, Italy |
| 2008 | Key-note talk: SIMP-AIC Joint Meeting, Sestri Levante, Italy |

SERVICE FOR SCIENTIFIC COMMUNITY

2015-2018	Elected Individual Members Representative in the Council of the European Crystallographic Association (ECA)
2015-2017	Elected member of the Teaching Committee of the Italian Crystallographic Association (AIC)
2002-present	Referee for journals of the pertinent scientific discipline

ORGANISATION OF MEETINGS AND SCHOOLS

2017	Session Convenor: "In situ and in operando crystallography: getting insights into the properties of materials and their response to external stimuli", XLVI AIC meeting, Perugia, Italy
2017	OC: AIC International School "Bridging the gap between cryo-EM and crystallography", Pavia, Italy
2016	Chair SC, OC: AIC-SIMP International School "Polymorphism, stability and phase transition in crystals", Rimini, Italy. Satellite event of EMC2
2015	OC: First European School on Crystal Growth, Bologna, Italy
2014	Chair OC, SC: 1 st European Crystallography School, Pavia, Italy
2013	SC: 1 st SIMP-AIC International School, Camerino, Italy
2011	SC: AIC International School "Crystallography Beyond Diffraction", Camerino, Italy
2011	SC, OC: EBSDays, Pavia, Italy
2009	Session Convenor: "Soluzioni solide di minerali: struttura, proprietà e risposta alle variazioni delle condizioni chimico-fisiche", Geoitalia 2009, Rimini, Italy
2009	OC: Workshop "Advances in crystallographic methods for the study of magnetism", Pavia, Italy

SC: Scientific Committee; OC: Organising Committee

RESEARCH INTERESTS and RECORDS

My research interests lie at the intersection of mineralogy, solid state chemistry and materials science, and are aimed to relate the short- and long-range crystal structure to the macroscopic behaviour of mineral solid solutions and other complex materials. So far, my work has dealt mainly with the investigation of mixing and high-temperature transformation behaviours of minerals and materials. Some studies of current interest include:

- Short-range structure and phase transitions in titanate perovskites;
- Role of crystallographic orientation in the early stage of solid state reactions;
- Crystal-chemistry, structure and magnetic properties of Fe-serpentines;
- Alkali activation of clays and waste to design materials for structural application;
- Strain and the thermosalient effect: jumping crystals
- Structure-properties relations in hybrid organic-inorganic framework materials

Co-author of 43 papers in peer-reviewed international ISI journals, 1 book chapter and over 100 abstracts of communications at national and international meetings.

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Current coworkers

Agnes Elmaleh (UPMC, Paris, France); Nobuyoshi Miyajima (BGI, Bayreuth, Germany); M. Zema (IUCr, UK); M. Pia Riccardi, Paolo Ghigna, Giorgio Spinolo (University of Pavia, Italy); Michael A. Carpenter (University of Cambridge, UK); Marco Scavini (University of Milano); Alberto Zanetti, Roberta Oberti (CNR-IGG); Cristina Siligardi, Maurizio Mazzucchelli (University of Modena and Reggio Emilia); Cristina Tedeschi, Alberto Grimoldi (Polytechnic University of Milan, Italy), Gennaro Ventruti (University of Bari, Italy), I.D. Williams (HKUST, Hong Kong), Ž. Skoko (U. Zagreb, Croatia).

LIST OF PUBLICATIONS

1. S.C. TARANTINO, M. ZEMA, A.M. CALLEGARI, M. BOIOCCHI, M.A. CARPENTER, Monoclinic-to-orthorhombic phase transition in $\text{Cu}_2(\text{AsO}_4)(\text{OH})$ olivenite at high temperature: strain and mode decomposition analyses, *Mineralogical Magazine*, **in press**.
2. A.M. CALLEGARI, M. BOIOCCHI, M. ZEMA, S.C. TARANTINO, Crystal structure refinement of duftite, $\text{PbCu}(\text{AsO}_4)(\text{OH})$, from Grube Clara, Oberwolfach, Schwarzwald, Germany, *Neues Jahrbuch für Mineralogie – Abhandlungen*, **194**, 157-164, 2017.
3. M. STURINI, A. SPELTINI, F. MARASCHI, A. PROFUMO, S. TARANTINO, A.F. GUALTIERI, M. ZEMA, Removal of fluoroquinolone contaminants from environmental waters on sepiolite and its photo-induced regeneration. *Chemosphere*, **150**, 686-693, 2016.
4. M. ZHANG, S.C. TARANTINO, W. SU, X. LOU, X. REN, E.K.H. SALJE, M.A. CARPENTER, S.A.T. REDFERN, Optical phonons, OH vibrations, and structural modifications of phlogopite at high temperatures: An in-situ infrared spectroscopic study, *American Mineralogist*, **101**, 1873-1883, 2016.
5. M. ZEMA, S.C. TARANTINO, M. BOIOCCHI, A.M. CALLEGARI, Crystal structure of adamite at high temperature, *Mineralogical Magazine*, **80**, 901-914, 2016.
6. S.C. TARANTINO, M. GIANNINI, M.A. CARPENTER, M. ZEMA, Cooperative Jahn-Teller effect and the role of strain in the tetragonal-to-cubic phase transition in $\text{Mg}_x\text{Cu}_{1-x}\text{Cr}_2\text{O}_4$, *IUCrJ*, **3**, 354-366, 2016.
7. M. CANTÙ, F. GIACOMETTI, A.G. LANDI, M.P. RICCARDI, S.C. TARANTINO, A. GRIMOLDI, Earthen mortars from Cremona (Northern Italy): The evolution throughout centuries of a manufacturing tradition, *Construction and Building Materials*, **125**, 520–532, 2016.
8. M. CLAUSI, S.C. TARANTINO, L.L. MAGNANI, C. TEDESCHI, M.P. RICCARDI, M. ZEMA, Metakaolin as a precursor of materials for applications in Cultural Heritage: geopolymer-based mortars with ornamental stone aggregates, *Applied Clay Science*, **132-133**, 589–599, 2016.
9. M. CLAUSI, L.L. MAGNANI, R. OCCHIPINTI, M.P. RICCARDI, M. ZEMA, S.C. Tarantino, Interaction of metakaolin-based geopolymers with natural and artificial stones and implications on their use in Cultural Heritage, *International Journal of Conservation Science*, **7**, 871-884, 2016.
10. M. CANTÙ, F. GIACOMETTI, A.G. LANDI, M.P. RICCARDI, S.C. TARANTINO, A. GRIMOLDI, Characterization of XVIIIth century earthen mortars from Cremona (Northern Italy): Insights on a manufacturing tradition. *Materials Characterization*, **103**, 81-89, 2015.
11. E. GASPARINI, S.C. TARANTINO, M. CONTI, R. BIESUZ, P. GHIGNA, F. AURICCHIO, M.P. RICCARDI, M. ZEMA, Geopolymers from low-T activated kaolin: Implications for the use of alunite-bearing raw materials, *Applied Clay Science*, **114**, 530 -539, 2015.
12. F. GIACOMETTI, G. REBAY, M.P. RICCARDI, S.C. TARANTINO, C.C. TIZZONI, M. TIZZONI, Iron Age silicate slags from Val Malenco (Italy): the role of textural and compositional studies in the reconstruction of smelting conditions. *Periodico di Mineralogia*, **83**, 329-344, 2014.
13. S. PIN, M. SUARDELLI, F. D'ACAPITO, G. SPINOLO, M. ZEMA, S.C. TARANTINO, P. GHIGNA, Role of interfacial energy and crystallographic orientation on the mechanism of the $\text{ZnO} + \text{Al}_2\text{O}_3 \rightarrow \text{ZnAl}_2\text{O}_4$ solid-state reaction: I. Reactivity of films deposited onto the Sapphire (110) and (012) faces. *Journal of Physical Chemistry C*, **117**, 6105-6112, 2013.
14. S. PIN, M. SUARDELLI, F. D'ACAPITO, G. SPINOLO, M. ZEMA, S.C. TARANTINO, P. GHIGNA, Role of interfacial energy and crystallographic orientation on the mechanism of the $\text{ZnO} + \text{Al}_2\text{O}_3 \rightarrow$

ZnAl₂O₄ solid-state reaction: II. Reactivity of films deposited onto the Sapphire (001) faces. *Journal of Physical Chemistry C*, **117**, 6113-6119, 2013.

15. E. GASPARINI, S.C. TARANTINO, P. GHIGNA, M.P. RICCARDI, E.I. CEDILLO-GONZÁLEZ, C. SILIGARDI, M. ZEMA, Thermal dehydroxylation of kaolinite under isothermal conditions, *Applied Clay Science*, **80-81**, 417-425, 2013.
16. S. PIN, M. NEWTON, F. D'ACAPITO, M. ZEMA, S.C. TARANTINO, G. SPINOLO, R. DE SOUZA, M. MARTIN, P. GHIGNA, Mechanisms of reactions in the solid state: the (110) Al₂O₃ + (001) ZnO interfacial reaction, *Journal of Physical Chemistry C*, **116**, 980-986, 2012.
17. A. ELMALEH, S.C. TARANTINO, M. ZEMA, B. DEVOUARD, M. FIALIN, The low-temperature magnetic signature of Fe-rich serpentine in CM2 chondrites: comparison with terrestrial cronstedtite and evolution with the degree of alteration, *Geochemistry, Geophysics, Geosystems*, **13**, Q05Z42, 2012.
18. P. GHIGNA, A. GARBERI, M. ZEMA, S.C. TARANTINO, C. MAZZOLI, Growth and characterization of high quality LuVO₃ single crystals. *Journal of Crystal Growth*, **351**, 118-121, 2012.
19. E. CONZ, L. APPOLONIA, P. GALINETTO, M.P. RICCARDI, S. TARANTINO, M. ZEMA, Chromatic alteration of Roman Heritage in Aosta (Italy). *Procedia Chemistry*, **8**, 78-82, 2012.
20. M. ZEMA, A.M. CALLEGARI, S.C. TARANTINO, E. GASPARINI, P. GHIGNA, Thermal expansion of alunite up to dehydroxylation and collapse of the crystal structure. *Mineralogical Magazine*, **76**, 613-623, 2012.
21. S.C. TARANTINO, M. ZEMA, G. CAPITANI, M. SCAVINI, P. GHIGNA, M. BRUNELLI, M.A. CARPENTER, Rhombic-shaped nanodomains in columbite driven by contrasting cation order, *American Mineralogist*, **96**, 374-382, 2011.
22. P. GHIGNA, S. PIN, G. SPINOLO, M.A. NEWTON, S.C. TARANTINO, M. ZEMA, Synchrotron radiation in solid state chemistry, *Radiation Physics and Chemistry*, **80**, 1109-1111, 2011.
23. P. GHIGNA, S. PIN, G. SPINOLO, M.A. NEWTON, M. ZEMA, S.C. TARANTINO, G. CAPITANI, F. TATTI, μ -XANES mapping of buried interfaces: pushing microbeam techniques to the nanoscale, *Physical Chemistry Chemical Physics*, **12**, 5547-5550, 2010.
24. M. ZEMA, S.C. TARANTINO, A.M. CALLEGARI, Thermal behaviour of libethenite from room temperature up to dehydration, *Mineralogical Magazine*, **74**, 555-567, 2010.
25. S.C. TARANTINO, M. ZEMA, T. BOFFA BALLARAN, Crystal structure of columbite under high pressure, *Physics and Chemistry of Minerals*, **37**, 769-778, 2010.
26. S.C. TARANTINO, M. ZEMA, P. GHIGNA, Some interesting compounds formed by the lanthanides and their crystal structures, In: P. Ghigna, Ed., *Advances in the solid state chemistry of f-elements*, Transworld Research Network, Kerala, India, ISBN: 978-81-7895-389-2, pp. 1-18, 2009.
27. S.C. TARANTINO, M. ZEMA, T. BOFFA BALLARAN, P. GHIGNA, Room-temperature equation of state of Li₂VOSiO₄ up to 8.5 GPa, *Physics and Chemistry of Minerals*, **35**, 71-76, 2008.
28. E. PAVARINI, S.C. TARANTINO, T. BOFFA BALLARAN, M. ZEMA, P. GHIGNA, P. CARRETTA, Effect of high pressure on competing exchange couplings in Li₂VOSiO₄, *Physical Review B*, **77**, 014425, 2008.
29. A. PRING, S.C. TARANTINO, C. TENAILLEAU, B. ETSCHMANN, M. CARPENTER, M. ZHANG, Y. LIU, R. WITHERS, The crystal chemistry of Fe-bearing sphalerites: An infrared spectroscopic study, *American Mineralogist*, **93**, 591-597, 2008.

30. M. ZEMA, S.C. TARANTINO, G. MONTAGNA, Hydration/dehydration and cation migration processes at high temperature in zeolite chabazite, *Chemistry of Materials*, **20**, 5876–5887, 2008.
31. M. ZEMA, P. GHIGNA, S.C. TARANTINO, Low alkali metal content in β -vanadium mixed bronzes: The crystal structures of β - $K_x(V,Mo)_6O_{15}$ ($x = 0.23$ and 0.32) by single-crystal X-ray diffraction, *Journal of Solid State Chemistry*, **180**, 577-582, 2007.
32. M. ZEMA, S.C. TARANTINO, P. GHIGNA, G. MONTAGNA, High temperature crystal structure of Li_2VOSiO_4 , a frustrated 2D quantum Heisenberg antiferromagnet, *Zeitschrift für Kristallographie*, **222**, 350-355, 2007.
33. M. ZHANG, Q. HUI, X.-J. LOU, S.A.T. REDFERN, E.K.H. SALJE, S.C. TARANTINO, Dehydroxylation, proton migration and structural changes in heated talc: An infrared spectroscopic study *American Mineralogist*, **91**, 816-825, 2006.
34. M. ZEMA, S.C. TARANTINO, A. GIORGIANI, Structural changes induced by cation ordering in ferrotapiolite, *Mineralogical Magazine*, **70**, 319-328, 2006.
35. C.C. TENAILLEAU, A. PRING, S.M. MOUSSA, Y. LIU, R.L. WITHERS, S. TARANTINO, M. ZHANG, M.A. CARPENTER, Composition induced structural phase transitions in the $(Ba_{1-x}La_x)_2In_2O_{5+x}$ ($0 \leq x \leq 0.6$) system, *Journal of Solid State Chemistry*, **178**, 882-891, 2005.
36. S.C. TARANTINO & M. ZEMA, Mixing and ordering behavior in manganocolumbite-ferrocolumbite solid solution: A single-crystal X-ray diffraction study, *American Mineralogist*, **90**, 1291-1300, 2005.
37. S.C. TARANTINO, P. GHIGNA, C. MCCAMMON, R. AMANTEA, M.A. CARPENTER, Local structural properties of $(Mn,Fe)Nb_2O_6$ from Mössbauer and X-Ray absorption spectroscopy, *Acta Crystallographica Section B: Structural Science*, **61**, 250-257, 2005.
38. S.A. HAYWARD, F.D. MORRISON, S.A.T. REDFERN, E.K.H. SALJE, J.F. SCOTT, K.S. KNIGHT, S. TARANTINO, A.M. GLAZER, V. SHUVAEVA, P. DANIEL, M. ZHANG, M.A. CARPENTER, Transformation processes in $LaAlO_3$: Neutron diffraction, dielectric, thermal, optical, and Raman studies, *Physical Review B*, **72**, 054110, 2005.
39. S.C. TARANTINO, M. ZEMA, F. MAGLIA, M.C. DOMENEGHETTI, M.A. CARPENTER, Structural properties of $(Mn,Fe)Nb_2O_6$ columbites from X-ray diffraction and IR spectroscopy, *Physics and Chemistry of Minerals*, **32**, 568-577, 2005.
40. M. ZEMA, S.C. TARANTINO, M.C. DOMENEGHETTI, V. TAZZOLI, Ca in orthopyroxene: structural variations and kinetics of the disordering process, *European Journal of Mineralogy*, **15**, 373-380, 2003.
41. S.C. TARANTINO, M.A. CARPENTER, M.C. DOMENEGHETTI, Strain and local heterogeneity in forsterite-fayalite solid solution, *Physics and Chemistry of Minerals*, **30**, 495-502, 2003.
42. S.C. TARANTINO, M. ZEMA, M. PISTORINO, M.C. DOMENEGHETTI, High temperature X-ray investigation of a natural columbite, *Physics and Chemistry of Minerals*, **30**, 590-598, 2003.
43. S.C. TARANTINO, M.C. DOMENEGHETTI, M.A. CARPENTER, C.J. SHAW, V. TAZZOLI, Mixing properties of the enstatite-ferrosilite solid solution: I. A macroscopic perspective, *European Journal of Mineralogy*, **14**, 525-536, 2002.
44. S.C. TARANTINO, T. BOFFA BALLARAN, M.A. CARPENTER, M.C. DOMENEGHETTI, V. TAZZOLI, Mixing properties of the enstatite-ferrosilite solid solution: II. A microscopic perspective, *European Journal of Mineralogy*, **14**, 537-547, 2002.