

Meet the Authors



Gilberto Artioli is a professor of mineralogy and crystallography at the University of Padova (Italy). He received his Laurea Degree from the University of Modena (Italy) and his PhD from the University of Chicago (USA). Artioli's interests focus on mineralogy and industrial materials, with scientific expertise in the use of combined techniques, including those based at large-scale facilities, to

investigate complex materials. He is the Director of the Centro Interdipartimentale di Ricerca per lo Studio dei Materiali Cementizi e dei Leganti Idraulici (known as CIRCe, or the centre for the investigation of cements) in Padova and is Chair of the International Union of Crystallography's Commission on Crystallography in Art and Cultural Heritage.



Constantin D. Athanassas (PhD) is a geologist based at the National Technical University of Athens (NTUA) (Greece) who explores the application of cosmic and nuclear radiation to geophysics and geochronology. He also works on numerical and stochastic models of geodynamic systems. Dr. Athanassas has carried out research in many institutions: optically stimulated luminescence dosimetry

at the University of Wales in Aberystwyth (UK) and at the Department of Materials Science at the National Centre of Scientific Research "Demokritos" (Greece); cosmic-ray exposure dating involving cosmogenic nuclides at the Centre Européen de Recherche et d'Enseignement des Géosciences de l'Environnement at CNRS Aix-Marseille University (France); and geoinformatics at NTUA.



Elena Basso is currently an Andrew W. Mellon Research Fellow at the Metropolitan Museum of Art in New York City (USA). She received her MS in geological sciences and her PhD in Earth science from the University of Pavia (Italy), where she spent the first 10 years of her career. Her initial research focused on the archaeometric study of archaeological and historic materials (ceramics, glass, mortars, stuccoes). She is currently working on the material characterization of Islamic pottery from the early/middle Islamic period (from around the 12th century) and is trying to reconstruct the technology of their production and their provenance.



Sylvain Bernard is a Centre National de la Recherche Scientifique (CNRS) researcher at the Institute of Mineralogy, Materials Physics, and Cosmochemistry (IMPMC) (Paris, France). Relying on a dynamic effort to bring together geochemistry, mineralogy and palaeontology, His fundamental scientific research directions can be synthesized in a single question, apparently trivial, although concealing fundamental and methodological issues: How do biomolecules evolve during fossilization processes? Based on the fine-scale characterization of fossilized organics using a combination of in situ spatially resolved spectromicroscopy techniques, as well as on an experimental approach to simulate fossilization processes in the lab, Bernard's work sheds new light on organic molecule preservation/degradation processes occurring during burial.



Loïc Bertrand obtained his PhD in physics from the Université Pierre et Marie Curie (Paris, France) in 2002. He has worked at Centre de Recherche et de Restauration des Musées de France (Paris), at University of Cambridge (UK) and the SOLEIL synchrotron, near Paris. Since 2010, he has been the Director of the IPANEMA European research platform on ancient materials. He is the author of some

50 articles dealing with properties of ancient materials studied by advanced spectroscopy and imaging methods. Dr. Bertrand's interests include the long-term aging and exceptional preservation behavior of biological remains and materials from archaeological settings, and also the manufacturing techniques and provenance of the raw materials used in making cultural artefacts. Bertrand is a board member of the Fondation des Sciences du Patrimoine and of the Academic Council of the Université Cergy-Pontoise.



Federico Carò received his PhD in Earth science from the University of Pavia (Italy), where he characterized natural and artificial building materials for conservation purposes. Currently, he is associate research scientist at the Department of Scientific Research of the Metropolitan Museum of Art (New York, USA), where he investigates, in close collaboration with conservators and curators, the inorganic materials used in artistic productions and the techniques to fashion them. He is now mainly interested in provenance studies, researching the petrographic and geochemical characterization of stone materials. Since 2007, he has been involved in the study of Southeast Asian sculptural and architectural materials.



Ekhine Garcia has a physics degree, specializing in geophysics, from the Complutense University of Madrid (Spain) and a masters in Physical Methods Applied to Cultural Heritage from the University of Bordeaux I (France). She worked for several years as an assistant manager for SOT Archaeological Prospection (a Spanish-based company that applies geophysics to cultural heritage problems). She is currently doing a PhD in archaeological geophysics at the University of the Basque Country (EHU/UPV) and in collaboration with the Aranzadi Society of Sciences in San Sebastian (Spain). Her PhD is centered on the characterization of geophysical methodologies in ancient archaeological sites of the Basque Country.



Pierre Gueriau is a postdoctoral researcher using the DIFFABS (diffraction and absorption) beamline at the SOLEIL Synchrotron (near Paris, France); he also works at the ancient material research platform IPANEMA (Gif-sur-Yvette, France), which is dedicated to characterizing archaeological materials. His research focuses on the microscale characterization of well-preserved fossils through trace element

imaging in order to decipher the compositional and mineralogical changes that may affect an organism during and after burial. He began using synchrotron radiation techniques on fossils during his PhD degree in invertebrate palaeontology and taphonomy at the Muséum National d'Histoire Naturelle in Paris.



Koen Janssens studied chemistry at the University of Antwerp (Belgium) where he is now a full professor of general and analytical chemistry. Since 1990, he has used microscopic beams of synchrotron radiation for 2-D and 3-D non-destructive analysis and imaging of heterogeneous materials to answer environmental or cultural heritage questions. In many cases, a combination of microscopic

X-ray fluorescence, X-ray absorption spectroscopy and X-ray diffraction is employed to obtain the information necessary to better understand the objects under study. Since 2008, in addition to chemical imaging at the micro- and nanoscopic scale, Janssens has used analytical instrumentation to visualize element distributions for large-scale cultural heritage objects, such as oil paintings, stained glass windows and illuminated manuscripts.



Stijn Legrand obtained his MSc in (analytical) chemistry in 2012 and is currently a PhD student the Antwerp X-ray, Electrochemistry and Speciation (AXES) research group of the University of Antwerp (Belgium). His research focusses on the development and use of non-destructive analytical imaging techniques using X-ray and infrared radiation. These techniques are often applied on flat cultural heritage artefacts and provide information on material usage, provenance, changes in composition and degradation phenomena.



Marco Leona is the David H. Koch Scientist in Charge at the Department of Scientific Research, Metropolitan Museum of Art (New York, USA). He obtained an MSc in chemistry and a PhD in crystallography and mineralogy at the University of Pavia (Italy). Now at the Metropolitan Museum of Art, he supervises a team conducting research on artists' materials and techniques and on art conservation.

In 2010, Dr. Leona joined the faculty of the Conservation Center of the Institute of Fine Arts at New York University as a lecturer in analytical chemistry. His interests include the non-invasive analysis of art works by reflectance spectroscopy, investigating Japanese painting techniques and materials and analyzing natural dyes using surface enhanced Raman spectroscopy.



Simona Quartieri received her masters degree in chemistry and PhD in mineralogy and crystallography from the University of Modena and Reggio Emilia (Italy). She then moved to the University of Messina (Italy), where she is now Professor of Mineralogy at the Department of Mathematics, Computing, Physics, and Earth Sciences. Her research interests concern mineral sciences, material sciences, and archaeometry. She has applied synchrotron-based diffraction and spectroscopic techniques to the study of ancient glass and mosaic tesserae and has published reviews on the application of synchrotron radiation to the study of cultural heritage. Prof. Quartieri has been member of the IUCr Commission on Crystallography in Art and Cultural Heritage and remains a consultant to that commission.



Roger Sala is an archaeologist, a graduate of the University of Barcelona (Spain) and the founder of SOT Archaeological Prospection, a Spanish company dedicated to archaeological geophysics. He has led more than 250 survey projects throughout Spain and has also worked in Turkey, Uzbekistan, the United Arab Emirates, France and England. He is a member of the International Society of

Archaeological Prospection and a reviewer of its journal. His research projects involve managing the excavation of archaeological sites using non-destructive methods, studying church foundations using ground penetrating radar and using spatial analysis to reveal and understand primary pathways of communication. He is one of the directors of the Roman archaeological site of Puig Ciutat (Barcelona, Spain).



Robert Tamba is an engineering geologist and graduate of the l'École Nationale Supérieure de Géologie de Nancy (France). He is currently finishing an industrial PhD in the Department of Learning Theory of Social Sciences at the University of Barcelona (Spain) and part of DIDPATRI research group. His PhD is on integrating geophysical and archaeological data and on implementing 2-D and 3-D thematic communication formats. He collaborates with the Spanish SOT Archaeological Prospection company, which is dedicated to applying geophysics to cultural heritage. Tamba specializes in data processing and participates in archaeological projects that use digital cartography.



Geert Van der Snickt is a cultural heritage scientist and holds a Chair on Advanced Imaging Techniques for the Arts at the University of Antwerp (Belgium). Prior to his current appointment, he earned a master's degree in conservation-restoration (2003) and a PhD in chemistry (2012) at the University of Antwerp. His work focuses on synchrotron radiation-based analysis and the application of newly developed chemical imaging techniques for non-invasive characterisation of paintings and art materials.



Frederik Vanmeert obtained his MSc in chemistry in 2010 at the University of Antwerp (Belgium). He is currently a doctoral student in the X-ray Analysis, Electrochemistry & Speciation (AXES) research group at the University of Antwerp. His work focuses on the application of synchrotron microbeams for imaging of cultural heritage materials. Vanmeert uses powder X-ray diffraction, X-ray fluorescence, and X-ray absorption near-edge spectroscopy as contrast methods to identify original compounds and their degradation products as well as visualize their spatial distribution. In order to perform measurements onsite, he is also developing and constructing a laboratory macroscopic X-ray power diffraction imaging system.



Günther A. Wagner was a director of the Archaeometry Department of the Heidelberg Academy of Humanities and Science at the Max-Planck-Institute for Nuclear Physics, Heidelberg (Germany). Concurrently, he was a professor of geology at the University of Heidelberg. After his retirement he joined Heidelberg's Department of Physical Geography. He is member of the German Archaeological Institute, guest professor at the University of Science and Technology of Hefei (China) and an editor for Springer's Natural Science in Archaeology series. He has authored several books and numerous articles on geochronology, archaeochronometry, archaeometallurgy and geoarchaeology.

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