

Short curriculum vitae

Daniela DI MARTINO

Education

- April 23rd, 1999: **Doctoral Degree** in Condensed Matter Physics from the Università degli Studi di Pavia
Dissertation title: *"Dopants local configuration in oxide glasses for technological applications"*
Supervisor: Prof. C. B. Azzoni
- October 28th, 1996: **Perfezionamento** in "La Scienza per la Conservazione dei Beni Culturali" from the Università degli Studi di Firenze (one year master).
Thesis title: *"San Girolamo by Piero di Cosimo: historic-artistic and conservation state analyses in view of a restoration work"*.
Thesis directors: Prof. L. Uzielli, Dr. O. Casazza
- July 6th, 1995: **Graduation** (104/110) in Physics from the Università degli Studi di Milano.
Thesis title: *"Set-up for a diagnostic technique based on Raman microspectrometry and on microspectrofluorimetry for the study of painting pigments and binding media"*.
Thesis directors: Dr. A. Gallone, Prof. M. Martini, Prof. G. Marazzan, Dr. G. Bottioli

Professional records

- Research contract (RTDA), University of Milano-Bicocca: 1/12/2017-30/11/2020; and since 1/12/2020 permanent staff member of the same University;
- Research fellowship, Università degli Studi di Milano-Bicocca: 1/11/2011-31/10/2017 and 1/3/2003-28/2/2007;
- NATO-CNR fellowship (Prague Academy of Sciences): 8/4/2004-8/6/2004;
- Research fellowship (Assegno di ricerca), INFM (National Institute of Materials Physics): 15/1/2002-28/2/2003;
- Marie Curie Individual Fellowship (Research contract, European Commission): 1/2/2000-31/12/2001;
- Research contract, INFM: 1/8/1999-31/12/1999;
- Scholarship (for studies in foreign countries), Università degli Studi di Pavia: 1/2/1999-31/7/1999;
- Scholarship (for doctoral studies), MURST: 1/11/1995-31/10/1998.
- Research breaks due to maternities (deliveries on 24/1/2005 and 22/5/2007) and a period (1/3/2007-31/10/2011) as high school professor, in physics, full time position.

Experiences in European laboratories:

In the period 2014-2020, I had 20 accepted beamtime requests (14 as Principal Investigator) at European large scale facilities (ISIS, PSI, IPERION CH), mainly for neutron diffraction and imaging experiments (see publications).

In the period 1997-2003, experimental measurements at HASYLAB laboratories (DESY, Hamburg, GERMANY), as co-project leader of the 3-years project: "PL of SiO₂ glass and glass-ceramic (II-03-005 EC)";

Relevant research experience and skills acquired

* Since January 2014 I joined the group headed by Prof. G. Gorini and I studied by neutron based techniques (diffraction, transmission and imaging) many archaeological samples (see publications 1-5 below).

* fluorescence microscopy and photoluminescence measurements applied to the study of technological devices.
Ongoing studies on glass mosaics (2011-2013) –

* Raman as well as luminescence and IR spectroscopies-based studies to characterize optical and structural properties of silica glasses (as thin films, bulk or fibers), rare earth doped. Also archaeometric samples (mosaics and gems) were investigated (2002-2007).

* a comprehensive study of glasses, under the direction of Prof. Rui Almeida (Instituto Superior Técnico, Lisbon, Portugal): preparation and characterization of alkali-germanate glasses, performing measurements of density, index of refraction, differential thermal analysis, X-ray diffraction, infrared (IR) absorption and reflectivity, X-ray photoelectron spectroscopy, atomic force microscopy, and Raman spectroscopy, as well as data treatment, interpretation and modelling (1999-2001).

* Electron Paramagnetic Resonance (EPR) characterization of monocrystals and amorphous materials, mainly lead germanate glass doped with Gd³⁺ (doctoral studies, 1996-1999).

* specialisation course on relevant scientific analyses to characterise archaeometric materials. In particular, microRaman and X-ray tomography on an ancient painting by Piero di Cosimo (perfezionamento thesis, 1996).

* microRaman measurements on modern pigments samples, and microspectrofluorimetry measurements on binding media (degree thesis, 1995).

FUNDING ID

- Co-PROPONENT, STEM activities in schools, national project, (2021) 15k€
- PARTICIPANT, HighNESS: Development of High Intensity Neutron Source at the European Spallation Source. 3 years project funded by H2020 (2020) 100k€
- PROPONENT: 2 years project funded by European Commission (contract number: HPMF-CT-1999-00145, Marie Curie Individual Fellowship). Project title: "Germanate anomaly and the structure of alkali germanate glasses" (2000) 100k€

Teaching and related activities

Since 1998 I gave seminars, laboratory classes, and part of degree university courses (mainly in "Physical methodologies applied to Cultural Heritage"). In the last two years, I gave 2 CFU course in Physics and 3 CFU laboratory course in plasma Physics, and I co-tutored 3 degree students. Experience also at high school level: full time professor in physics (2007-2011). I attended several congresses devoted to cultural heritage (SR2A 2018 in Portsmouth, UK and SR2A 2014, in Paris, F; TECHNART 2015, Catania, I; ECNS 2015 Saragoza, S; Workshop on IMAGING, Varenna, I in 2015 and 2017), presenting my research results.

Other skills/publications

Good knowledge of English, basic knowledge of French, German and Portuguese. Good knowledge of many scientific software programs of data reduction, as well as Windows programs and software applications. I published more than 76 papers (1043 citations, h-factor=18 from SCOPUS database). A complete list of my papers is available at ORCID ID orcid.org/0000-0003-1541-5236. Some recent publications are listed below.

[1] D. Di Martino et al., "The Chiaravalle Cross: Results of a Multidisciplinary Study". *Heritage*, 2(3), 2555-2572 (2019). DOI: 10.3390/heritage2030157D. [2] Di Martino et al., "A multidisciplinary non-destructive study of historical pipe organ fragments", *Materials characterization* 148, 317-322 (2019). [3] D. Di Martino et al., "A neutron diffraction and imaging study of ancient iron tie rods", *Journal of Instrumentation* 13, C05009 (2018). [4] D. Di Martino, E. Perelli Cippo and G. Gorini, "From tiny gold filigrees to majestic iron tie rods: neutron facilities for the benefit of cultural heritage", *European Physical Journal Plus* 133, 371 (2018). [5] D. Micieli, D. Di Martino et al., "Characterizing pearls structures using X-ray phase-contrast and neutron imaging: a pilot study", *Scientific Reports* 8, 12118 (2018).