

Candida Moffa

EDUCATION AND TRAINING



Ph.D. Course in Mathematical Models for Engineering, Electromagnetics and Nanosciences-Second Year

Department of Basic and Applied Sciences for Engineering (SBAI), Sapienza, University of Rome [01/11/2022 – Current]

City: Rome

Country: Italy

Master's Degree in Science and Technology for the Conservation of Cultural Heritage (LM-11)

La Sapienza [2020 – 21/10/2022]

Final grade: 110L/110

Thesis: Terahertz for diagnostics and preventive conservation of Cultural Heritage

Bachelor's Degree in Technologies for Conservation and Restoration of Cultural Heritage (L-43)

La Sapienza [2018 – 17/07/2020]

Final grade: 104/110

Thesis: Application of energy dispersive X-ray fluorescence spectroscopy (ED-XRF) and fiber optic reflectance spectroscopy (FORS) to the study of manuscripts preserved at the Library of the "Accademia dei Lincei e Corsiniana"

High school leaving qualification (Diploma di Maturità Scientifica)

Istituto di Istruzione Superiore "Don Peppino Diana" [2008 – 2013]

City: Colle Sannita

Final grade: 94/100

SCHOLARSHIPS

Scholarship "Spectroscopic analysis of paintings"

[01/05/2022 – 01/08/2022]

Research activity within the "IMAGO" – DTC project.

The activity consists of the spectroscopic analysis of some paintings preserved in the Galleria dell'Accademia Nazionale di San Luca. The research work will consist of the acquisition and processing of fiber optic reflectance spectra (FORS spectroscopy) and UV-Vis NIR multispectral images.

INTERNSHIP

Internal Training Internship Master's Degree

[11/2021 – 10/2022]

Application of terahertz spectroscopy in the frequency domain (THz-CW) to solid, liquid and gaseous compounds of environmental interest (VOCs, GHG) and Cultural Heritage (pigments and dyes) carried out at the Sapienza Terahertz Laboratory SBAI-Department of Basic Sciences and Applied Engineering (SBAI), Sapienza - University of Rome, via Scarpa, 14, 00161 Rome (Italy)

Internal Training Internship Bachelor's Degree

[2020]

Application of non-invasive spectroscopic techniques (energy dispersive X-ray fluorescence spectroscopy (ED-XRF), fiber optic reflectance spectroscopy (FORS) and UV-induced fluorescence spectroscopy for the characterization and identification of pigments, dyes and inks carried out at the Laboratory of Archaeometry and Non-Destructive Analysis, Department of Basic and Applied Sciences for Engineering (SBAI), Sapienza - University of Rome, via Scarpa, 14, 00161 Rome (Italy)

PUBLICATIONS

Pigments, minerals, and copper-corrosion products: Terahertz continuous wave (THz-CW) spectroscopic characterization of antlerite and atacamite

[2024]

(01a Articolo in rivista)

C. Mořfa, C. Merola, F. Magboo, E. Chiadroni, L. Giuliani, A. Curcio, L. Palumbo, A.C. Felici, M. Petrarca

<https://doi.org/10.1016/j.culher.2023.12.018>

Non-invasive investigation of three paintings attributed to Cavalier d'Arpino by means of ED-XRF, FORS and Multispectral Imaging

[2023]

(04f Poster, 04d Abstract in atti di convegno)

V. Bruni, E. Colonna, A. C. Felici, G. Mazzei, C. Mořfa, A. Pascarella, F. Pelosi, F. Pitolli, F. Porzio, D. Vitulano, "Non-invasive investigation of three paintings attributed to Cavalier d'Arpino by means of ED-XRF, FORS and Multispectral Imaging", in *Technart2023. International conference on analytical techniques in art and cultural heritage (Book of Abstracts)*.

Non-invasive identification of coloring materials based on terahertz continuous-waves (THz-CW) spectroscopy

[2023]

(04d Abstract in atti di convegno)

C. Mořfa, F. Jr. P. Magboo, L. Palumbo, A. C. Felici, M. Petrarca, "Non-invasive identification of coloring materials based on terahertz continuous-waves (THz-CW) spectroscopy", in *Technart2023. International conference on analytical techniques in art and cultural heritage (Book of Abstracts)*.

Terahertz continuous wave spectroscopy: a portable advanced method for atmospheric gas sensing

[2022]

(01a Articolo in rivista)

A. D'Arco, D. Rocco, F. P. Magboo, C. Mořfa, G. Della Ventura, A. Marcelli, L. Palumbo, L. Mattiello, S. Lupi and M. Petrarca, "Terahertz continuous wave spectroscopy: a portable advanced method for atmospheric gas sensing," *Opt. Express* 30, 19005-19016 (2022).

<https://doi.org/10.1364/OE.456022>

COURSES

CHALLENGES Training School on real time nano characterization related technologies

[12/02/2024 – 13/02/2024]

CHALLENGES

Synchrotrons and X-Ray Free Electron Lasers

[06/10/2023]

EPFLx (Online course of École polytechnique fédérale de Lausanne)

School of Microscopy for Cultural Heritage at the University of Rome La Sapienza

[13/06/2023 – 16/06/2023]

Zeiss Microscopy Team Università di Roma La Sapienza, Aula B, Edificio CU016 (ex-ortopedia), Piazzale Aldo Moro 5, 00133 Roma

Multivariate Analysis of Spectroscopic Data - Cutting-edge chemometric strategies for conservation science

[05/06/2023 – 06/06/2023]

CCR Digital Lab-Fondazione Centro Conservazione e Restauro dei Beni Culturali "La Venaria Reale"

Comparison of diagnostic techniques. Case studies, fields of application, advantages, limitations.

[11/11/2022 – 12/11/2022]

In the 8 theoretical-practical hours the following topics were addressed: Multispectral Imaging (IR Reflectography, False Color IR, UV Fluorescence, Grazing Light, Transmitted Light, Macro photography, Radiography); XRF spectroscopy (X-ray fluorescence); Fourier Transform Infrared Spectroscopy (FT-IR); UV-VIS-NIR Optical Fiber Reflectance Spectroscopy (FORS).

Outlines of Codicology

[03/08/2022]

Associazione Culturale NUME Gruppo di Ricerca sul Medioevo Latino

From Imaging to Punctual Techniques. School of UV-Vis-NIR Spectroscopy, Multiband and Hyperspectral Imaging for Applications in Cultural Heritage

[21/09/2021 – 24/09/2021]

Fondazione Centro per la Conservazione ed il Restauro dei Beni Culturali "La Venaria Reale"

Structure of Materials

[11/01/2021 – 25/08/2021]

MITx (Online Course of Massachusetts Institute of Technology)

X-Ray Radiography

[20/05/2021]

Empiria Beni Culturali

Thermoluminescence

[15/04/2021]

Empiria Beni Culturali

Cultural Heritage in Transformation

[05/04/2021 – 07/05/2021]

RWTHx (Online Course of RWTH Aachen University)

Quantum Mechanics of Molecular Structures

[23/01/2021 – 27/02/2021]

UTokyoX (Online Course of The University of Tokyo)

Japanese Books: From Manuscript to Print

[22/12/2020 – 23/02/2021]

HarvardX (Online Course of Harvard University)

AMARCH 2021 Analysis of Materials for Archeology and Cultural Heritage - The contribution of X-ray techniques

[10/02/2021 – 12/02/2021]

Scuola di Alta Formazione: Laboratorio Bagolini di Archeologia, Archeometria e Fotografia del Centro di Alti Studi Umanistici (CeASUm), Laboratorio Beni Culturali del Dipartimento di Ingegneria Industriale, in collaborazione con il Dipartimento di Fisica, Università di Trento

XRF Spectrometry

[10/02/2021]

Empiria Beni Culturali

School of Infrared and Raman Spectroscopy-VIII edition

[11/11/2019 – 15/11/2019]

Fondazione Centro per la Conservazione ed il Restauro dei Beni Culturali "La Venaria Reale"

LANGUAGE SKILLS

Mother tongue(s): **Italian**

Other language(s):

English

LISTENING C1 READING C1 WRITING C1

SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1

French

LISTENING A2 READING B1 WRITING A1

SPOKEN PRODUCTION A1 SPOKEN INTERACTION A1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

DIGITAL SKILLS

Microsoft Office (Microsoft Word, Microsoft Excel, Microsoft Powerpoint, Microsoft Access) / OriginPro 2016 / PyMCA / MatLab (R2019a) / AvaSoft 8 / Overleaf (LaTeX) / Database SQL / DinoCapture / Basi di GIMP / ToptiCTA-TOPTICA
Continuous-Wave Terahertz Analysis / PGOPHER

CONFERENCES AND SEMINARS

MetroArcheo 2023-IMEKO INTERNATIONAL CONFERENCE ON Metrology for Archaeology and Cultural Heritage

[Roma Tre University, Rome, Italy, 19/10/2023 – 21/10/2023]

Oral presentation. Symposium II - Diagnostic. Session 4.2 - Terahertz, millimeter wave and optical techniques applied to cultural heritage

"Investigation of natural and synthetic pigments: terahertz continuous-waves spectroscopy (THz-CW) as a reliable high-resolution approach applied to the Cultural Heritage field"

Candida Mořa, Fernando Jr. Piamonte Magboo, Alessandro Curcio, Luigi Palumbo, Anna Candida Felici and Massimo Petrarca

Young Researchers in Archaeometry 2023-YRA2023

[03/10/2023 – 06/10/2023]

Oral presentation. Session 7: Pigments and Painting

"Terahertz continuous wave spectroscopy (THz-CW) for the characterization of pure pigments and binary mixtures: An innovative approach"

Candida Mořa

109° Congresso Nazionale SIF (Italian Physical Society)

[Dipartimento di Fisica dell'Università di Salerno (Fisciano), Italy, 11/09/2023 – 15/09/2023]

Oral presentation. Session VI - Applied physics, accelerators and cultural heritage

"Application of Terahertz Continuous Wave (THz-CW) spectroscopy for the quantitative identification of Cultural Heritage materials."

Candida Mořa, Camilla Merola, Fernando Jr. Piamonte Magboo, Alessandro Curcio, Luigi Palumbo, Anna Candida Felici, Massimo Petrarca.

PIERS 2023-PhotonIcs and Electromagnetics Research Symposium

[Prague, Czech Republic, 13/06/2023 – 16/06/2023]

Oral presentation. Session 3P4b: State-of-the-Art Terahertz Science and Technology

"Terahertz Continuous-waves Spectroscopy (THz-CW): A Reliable High-resolution Approach Applied to the Cultural Heritage Field for the Characterization of Coloring Materials"

Candida Mořa; Fernando Jr. Piamonte Magboo; Luigi Palumbo; Anna Candida Felici; Massimo Petrarca.

Technart2023. Non-destructive and Microanalytical Techniques in Art and Cultural Heritage.

[Lisbon, Portugal, 07/05/2023 – 12/05/2023]

Oral presentation. Session A: Analytical Methods

"Non-invasive identification of coloring materials based on terahertz continuous-waves (THz-CW) spectroscopy"

Candida Mořa, Fernando Jr. Piamonte Magboo, Luigi Palumbo, Anna Candida Felici and Massimo Petrarca

Poster Session

"Non-invasive investigation of three paintings attributed to Cavalier d'Arpino by means of EDXRF, FORS and Multispectral Imaging"

Vittoria Bruni, Edoardo Colonna, Anna Candida Felici, Gianluca Mazzei, Candida Mořa, Annalisa Pascarella, Francesca Pelosi, Francesca Pitolli, Fabio Porzio and Domenico Vitulano

Young Researchers in Archaeometry-YRA 5th Workshop

[Online, 05/09/2022 – 06/09/2022]

Oral presentation

"THz-CW identification of potentially damaging VOCs in the Cultural Heritage field"

Candida Mořa

NanoInnovation 2022

[Rome, Italy, 19/09/2022 – 23/09/2022]

Oral presentation. Session: Key Enabling Technologies for the protection of cultural heritage: from earthquakes to big data - Part 2

Co-organized with CdE DTC Lazio

"Advanced methods for multispectral image processing and multi techniques diagnostic for an innovative fruition of paintings: the case study of IMAGO project"

Edoardo Colonna and Candida Mořa

NETWORKS AND MEMBERSHIPS

Socio ANEDbc (Associazione Nazionale degli Esperti di Diagnostica e di scienze e tecnologie applicate ai Beni Culturali)

[01/2021 – Current]

ATTENDED CONFERENCES AND SEMINARS

Non-invasive approach to map pigment in the wall paintings of the frigidarium in the Sarno Baths, Pompeii

[22/09/2023]

Seminar

Seminar Prof. Yotam Assher Director of the Analytical Laboratory at the Israel Antiquities Authority (IAA) and Assistant Professor at the University of Haifa, Israel

From free-electrons to bound electrons:attosecond science with X-ray free-electron lasers

[31/03/2023]

Seminar

Prof. Agostino Marinelli (Stanford University, SLAC)

RESTORATION IN THE 21st CENTURY - Protection, dialogue, passion (2nd Edition) The materiality of the contemporary

[06/05/2022 – 07/05/2022]

Organized by **AnedBC**

Science & Sensitivity 2021 – Pushing the limits of Analytical Chemistry through High-Sensitivity Diagnostics in Art and Archaeology

[21/06/2021 – 22/06/2021]

RESTORATION IN THE 21ST CENTURY – Protection, dialogue, passion. (First edition)

[17/04/2021 – 18/04/2021]

Organized by **AnedBC**