



Consiglio Nazionale
delle Ricerche

Istituto di Chimica dei Composti Organometallici (ICCOM)

ALLEGATO B

DICHIARAZIONI SOSTITUTIVE DI CERTIFICAZIONI

(art. 46 D.P.R. n. 445/2000)

DICHIARAZIONI SOSTITUTIVE DELL'ATTO DI NOTORIETÀ

(art. 47 D.P.R. n. 445/2000)

..La sottoscritta...

COGNOME Muzzi

—

(per le donne indicare il cognome da nubile)

NOME Beatrice

—

NATO A

PROV.

IL

ATTUALMENTE RESIDENTE A:

PROV.

INDIRIZZO

C.A.P.

TELEFONO

Visto il D.P.R. 28 dicembre 2000, n. 445 concernente "T.U. delle disposizioni legislative e regolamentari in materia di documentazione amministrativa" e successive modifiche ed integrazioni;

Vista la Legge 12 novembre 2011, n. 183 ed in particolare l'art. 15 concernente le nuove disposizioni in materia di certificati e dichiarazioni sostitutive (*);

Consapevole che, ai sensi dell'art.76 del DPR 445/2000, le dichiarazioni mendaci, la falsità negli atti e l'uso di atti falsi sono punite ai sensi del Codice penale e delle leggi speciali vigenti in materia, dichiara sotto la propria responsabilità:

**che quanto dichiarato nel seguente curriculum vitae et studiorum
comprensivo delle informazioni sulla produzione scientifica
corrisponde a verità**

CNR-ICCOM Sede di Firenze

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PARTITA IVA N. 02118311006 - CODICE FISCALE N. 80054330586

Curriculum vitae et studiorum

studi compiuti, i titoli conseguiti, le pubblicazioni e/o i rapporti tecnici e/o i brevetti, i servizi prestati, le funzioni svolte, gli incarichi ricoperti ed ogni altra attività scientifica, professionale e didattica eventualmente esercitata **(in ordine cronologico iniziando dal titolo più recente)**

(*) ai sensi dell'art. 15, comma 1 della Legge 12/11/2011, n. 183 le certificazioni rilasciate dalla P.A. in ordine a stati, qualità personali e fatti sono valide e utilizzabili solo nei rapporti tra privati; nei rapporti con gli Organi della Pubblica Amministrazione e i gestori di pubblici servizi, i certificati sono sempre sostituiti dalle dichiarazioni sostitutive di certificazione o dall'atto di notorietà di cui agli artt. 46 e 47 del DPR 445/2000

N.B:

- 1) Datare e sottoscrivere tutte le pagine che compongono la dichiarazione.
 - 2) Allegare alla dichiarazione la fotocopia di un documento di identità personale, in corso di validità.
 - 3) Le informazioni fornite con la dichiarazione sostitutiva devono essere identificate correttamente con i singoli elementi di riferimento (esempio: data, protocollo, titolo pubblicazione ecc...).
 - 4) Il CNR, ai sensi dell'art. 71 e per gli effetti degli artt. 75 e 76 del D.P.R. 445 del 28/12/2000 e successive modifiche ed integrazioni, effettua il controllo sulla veridicità delle dichiarazioni sostitutive.
 - 5) La normativa sulle dichiarazioni sostitutive si applica ai cittadini italiani e dell'Unione Europea.
 - 6) I cittadini di Stati non appartenenti all'Unione, regolarmente soggiornanti in Italia, possono utilizzare le dichiarazioni sostitutive di cui agli artt. 46 e 47 del D.P.R. 445 del 28.12.2000 limitatamente agli stati, alla qualità personali e ai fatti certificabili o attestabili da parte di soggetti pubblici italiani, fatte salve le speciali disposizioni contenute nelle leggi e nei regolamenti concernenti la disciplina dell'immigrazione e la condizione dello straniero.
- Al di fuori dei casi sopradetti, i cittadini di Stati non appartenenti all'Unione autorizzati a soggiornare nel territorio dello Stato possono utilizzare le dichiarazioni sostitutive nei casi in cui la produzione delle stesse avvenga in applicazione di convenzioni internazionali fra l'Italia e il Paese di provenienza del dichiarante.



Curriculum vitae



*Dichiarazione sostitutiva di certificazione e dichiarazione sostitutiva
dell'atto di
notorietà ai sensi del D.P.R. 445/28.12.2000*

Il/La sottoscritto/a

consapevole delle responsabilità penali cui può andare incontro, in caso di
dichiarazioni mendaci, ai sensi e per gli effetti di cui all'art. 76 del D.P.R. 445/2000 e
consapevole che, ai sensi dell'art. 13, del Regolamento UE 2016/679 (GDPR).

**dichiara
ai sensi degli artt. 46 e 47 del DPR
445/2000**

Personal information

First name / Surname **Beatrice Muzzi**

Address

Telephone

E-mail

Nationality Italian

Date of birth

ORCID iD 0000-0001-9151-7723

Education



October 2017- September 2020

PhD student Dept. of Biotechnology, chemistry and pharmacy, University of Siena

PhD project: Synthesis and characterization of nanostructured materials for the realization of permanent magnets with low content of rare earth

Supervisor: Claudio Sangregorio - Researcher



March 2019- August 2019

Research activity at Laboratorio de Microscopias Avanzadas (LMA) and Instituto de Nanociencia de Aragón (INA), Zaragoza, Spain

PhD project: Transmission Electron Microscopy characterization of nanostructured materials

Supervisor: Claudio Sangregorio – Researcher

Supervisor: Ricardo Ibarra - Professor



September 2015 - July 2017

Second level degree (Master of science) in Chemistry (110/110 cum laude and distinguished mention of the Commission) University of Florence

Curriculum: **Supramolecular chemistry, nano-systems and chemistry of materials**

Thesis title: Preparation and characterization of Magnesium perovskite solar cells

Supervisors: Gabriella Caminati – Researcher, Matteo Mannini – Researcher



September 2011- May 2015

Chemistry Bachelor's degree, University of Rome "Tor Vergata"

Thesis title: Study and characterization of peptide films obtained by Langmuir-Blodgett deposition

Supervisor: Mariano Venanzi - Associate professor CHIM/02 – Physical chemistry

Professional experiences

Current Position

01 December 2023 – 31 December 2023

Post-doc Fellowship (Italian Borsa di Studio) - *National Interuniversity Consortium of Materials Science and Technology (INSTM), Florence Research Unit, Italy*

Previous Position

01 December 2022 – 30 November 2023

Post-doc Fellowship – *ICCOM-CNR, Florence Research Unit, Italy*. **Project:** Optimization of sustainable synthetic and recycling procedures of permanent magnets and their chemical-physical characterization.

28 May 2023 – 08 June 2023

Visiting Researcher – Advanced electron microscopy experiments at the *Laboratorio de Microscopias Avanzadas (LMA) and Instituto de Nanociencia de Aragón (INMA), Zaragoza, Spain*.

01 February 2022 – 30 November 2022

Post-doc Fellowship (Italian Borsa di Studio) – *National Interuniversity Consortium of Materials Science and Technology (INSTM), Florence Research Unit, Italy*. **Project:** Synthesis and characterization of cobalt and iron-based core@shell soft@hard permanent magnet.

01 January 2021- 31 January 2022

Post-doc Fellowship - *Laboratoire de Physique et Chimie des Nano-objets (LPCNO), Institut national des sciences appliquées de Toulouse (INSA Toulouse), Toulouse, France*. **Project:** Switchable magneto-plasmonic contrast agents and molecular imaging technologies – SWIMMOT (H2020).

01 December 2020 – 31 December 2020

Post-doc Fellowship (Italian Borsa di Studio) – *University of Florence, Florence, Italy* **Project:** Synthesis and characterization of diamagnetic and paramagnetic nanoparticles of quaternary sulfides for solar

01 March 2020 – 15 March 2020

Visiting student - *Laboratorio de Microscopias Avanzadas (LMA) and Instituto de Nanociencia de Aragón (INA), Zaragoza, Spain*.

01 October 2020 – 30 November 2020

Post-doc Fellowship (Italian Borsa di Studio) - *National Interuniversity Consortium of Materials Science and Technology (INSTM), Florence Research Unit, Italy*.

Project: Investigation of magnetic susceptibility and photomagnetism on nanostructured magnetic materials and complex spin-crossover

01 March 2019 – 31 August 2019

Visiting student - *Laboratorio de Microscopías Avanzadas (LMA) and Instituto de Nanociencia de Aragón (INA), Zaragoza, Spain.*

01 October 2017- 30 September 2020

PhD student – *University of Siena in collaboration with the National Research Centre (CNR-ICCOM)*

01 July 2017 – 30 September 2017

Post MSc - *Center of Colloids and Surface Science (CSGI), Dept of Chemistry, University of Florence, Italy*

Personal skills and competences

My scientific training started at the University of Rome "Tor Vergata", where the bachelor thesis project was focused on the study of the different aggregation of C^α-tetrasubstituted peptide films obtained by Langmuir-Blodgett deposition. Peptide films were characterized by UV-VIS, static and time resolved fluorescence, dichroism circular (DC), AFM and FT-IR. Stimulated by this initial experience, I have decided to expand my knowledge in the field of supramolecular chemistry and nanosystems following the courses of Chemistry of the University of Florence, where I had a six months of training focused on the preparation and characterization of eco-friendly perovskites solar cells. At the same time, I participated to the study on plasmonic properties of metallic nanoparticles and how they can increase the performance of photovoltaic devices. In this project I used XPS, XRD, BAM, QCM, UV-VIS, reflectance and fluorescence spectroscopy for the characterization of devices assembled through Langmuir-Blodgett, drop casting and spin coating techniques. In 2017 I started the PhD in Chemistry and Pharmaceutical Science at the University of Siena in collaboration with the LaMM group at the University of Florence, where I performed all my research activities. The PhD thesis is focused on the synthesis and the characterization of magnetic nanostructures rare-earth free; with this aim I used several synthetic approaches as liquid phase and solid phase methods (thermal decomposition, co-precipitation, combustion and annealing). The physical properties of the obtained systems are investigated using XRD, XPS, STEM, EELS, HRTEM, SQUID and PPMS techniques. Moreover, during my PhD I spent six months at the Instituto de Nanociencia de Aragón (INA), Zaragoza, Spain, where I had the possibility to personally use Advanced Electron Microscopies (Low and High base TITAN) improving my instruments skills and I also learned the related data analysis (EELS spectra analysis, HRTEM, GPA and Strain mapping). After the PhD I decided to move to Toulouse, France, and working at the INSA center as a post-doc on the European project SWIMMOT. My main role is the synthesis of cobalt based hetero-nanostructures with variable shape and the electron microscopy characterization of these materials.

Instruments skills

Transmission electron microscopy: TEM CM12 Philips (100 kV), JEOL 1011 (100 kV), T20 (80-200 kV)

Scanning Transmission electron microscopy: TALOS F200 ThermoFisher, JEOL 2100 F (80-200 kV), JEOL ARM 200 (80-200 kV), STEM Titan Thermo Fischer Scientific (60-300 kV)

Scanning Electron Microscopy: Gaia Tescan FIB-SEM dual beam, Hitachi SU3800 SEM

Powder X-Ray diffraction: XRD Bruker New D8 ADVANCE ECO,

Quantum Design MPMS SQUID and PPMS magnetometers

Thermogravimetric analysis: TA Instrument SDT650 Discovery

X-ray photoelectron spectroscopy: XPS VSW with a hemispherical analyser VSW

Langmuir-Blodgett deposition: KSV3000 (KSV Instruments Ltd, Finland)

Spin coater: SpincoaterP6700 (Specialty coating systems, inc.)

Quartz crystal microbalance: QCM-Z500 (KSV-Instruments Ltd.)

Infrared spectroscopy (FTIR)

Spectrophotometer: Lambda 900 (Perkin Elmer, Italy) Spectrofluorometer: LS50B (Perkin Elmer, Italy)

Spectropolarimeter: JASCO J-175.

Technical skills

Excellent level of: Digital Micrograph (GATAN) VELOX (ThermoFisher) and TIA (GATAN) for HRTEM, GPA, EELS, ED and EDX data analysis. Analysis station (JEOL) and Esprit (Bruker). Diffract-EVA (Bruker) and Topas (Bruker) for powder diffraction pattern and for Rietveld refinement. CASAXPS for XPS spectra. Origin, Igor, Kaleidagraph, VESTA, Word, Power Point, Excel

Other languages

	Understanding		Speaking		Writing
	listening	reading	Spoken interaction	Spoken production	
English	B2	B2	B2	B2	B2
Spanish	B1	B1	B1	B1	B1

Publications

Tuning the Morphology of Nanostructured Peptide Films by Introduction of a Secondary Structure Conformational Constraint: A Case-Study of Hierarchical Self-Assembly. De Zotti, Marta; **Muzzi, Beatrice**, et al. *J. Phys. Chem. B* **2018**, 122, 24, 6305-6313

Unraveling the mechanism of the one-pot synthesis of exchange coupled Co-based nano-heterostructures with high energy product. **B. Muzzi et al. Nanoscale**, **2020** **12**, 14076 - 14086,

Optimizing the magnetic properties of hard and soft materials for producing exchange spring permanent magnets. Petrecca M, **Muzzi B.** et al. *Journal of Physics D: Applied Physics*, **2021**, 54, 13, 13

Lipid cubic mesophases combined with Superparamagnetic Iron Oxide Nanoparticles: a hybrid multifunctional platform with tunable magnetic properties for nanomedical applications. L. Caselli, M. Mendoza, **B. Muzzi et al. Int. J. Mol. Sci.** **2021**, 22(17), 9268

3d metal doping of core-shell wüstite@ferrite nanoparticles as promising route towards room temperature exchange bias magnets. **B. Muzzi et al. Small** **2022**, 2107426

Epsilon Cobalt Nanoparticles as Highly Performant Catalysts in Cinnamaldehyde Selective Hydrogenation. Yi, Deliang; Min, Yuanyuan; **Muzzi, Beatrice**, et al. *ACS Appl. Nano Mater.* **2022**.

Star-Shaped Magnetic-Plasmonic Au@Fe₃O₄ Nano-Heterostructures for Photothermal Therapy. **B. Muzzi et al. ACS Appl Mater Interfaces.** **2022** (25): 29087–29098.

Hardening of Cobalt Ferrite Nanoparticles by Local Crystal Strain Release. Implications for Rare Earth Free Magnets. **B. Muzzi et al. ACS Applied Nano Materials** **2022**, 5, 10, 14871–14881

Defect-engineering by solvent mediated mild oxidation as a tool to induce exchange bias in metal doped ferrites. **B. Muzzi et al. Small Methods**, **2023**, DOI:10.1002/smt.202300647

New Mechanistic Insights into the Copper-free Heck–Cassar–Sonogashira cross-coupling reaction, Palladino, C.; Fantoni, T.; Ferrazzano, L.; **Muzzi, B.**; *ACS Catalysis*, **2023** Accepted

An alternative synthesis of magnetic biochar from green coconut husks and its application for simultaneous and individual removal of caffeine and salicylic acid from aqueous solution, *Journal of Environmental Chemical Engineering*, **2023** DOI:10.1016/j.jece.2023.110835

Synthetic strategies to improve the magnetic properties of exchange coupled nano-heterostructures (Chapter), **B. Muzzi et al.**, Magnetic Nanoparticles (Book), *Royal Society of Chemistry*, **2023**

Reviewer

- *Journal of Physics D: Applied Physics*
- *IEEE Magnetic Letters (IML) journal* - Publishing Committee of the IBCM-2021
- *Nanotechnology*
- *Nanoscale Horizon*

Participation at conferences, schools and seminars

Schools

Italian School of Magnetism 2020, Poster contribution 3-7/02/2020, Rome, Italy

European School on Magnetism 2018, Poster contribution 17-28/09/2018, Krakow, Poland

CHESS 2017, Conventional and High-Energy spectroscopies for inorganic, organic and biomolecular surface and interface, 27-30/11/2017, Florence, Italy

Conferences

As main author

Giornate Scientifiche ICCOM-CNR – 09/11-10/11/2023 - *Exchange bias in metal-doped single-phase ferrites induced by defect engineering of core@shell nanoparticles.*

JEMS2023 – 27/08 – 01/09/2023 Madrid, Spain- **Oral presentation** - *Exchange bias in metal-doped single-phase ferrites induced by defect engineering of core@shell nanoparticles*

8th NanoBoston 2022 – 31/10 – 2/11/2022 Boston, USA - **Online Oral presentation** - *3d metal doping of core-shell wüstite@ferrite nanoparticles as promising route towards room temperature exchange bias magnets.*

Giornate di dipartimento 2022 – DSCTM – 26-28/10/2022 Catania, Sicily – **Poster contribution** - *Star shaped magnetic-plasmonic Au@Fe₃O₄ nano-heterostructures for photothermal therapy*

ICFPM2022 17-21/10/2022 Yokohama, Japan – **Oral presentation** - *3d metal doping of core-shell wüstite@ferrite nanoparticles as promising route towards room temperature exchange bias magnets.*

Manget2022 11-13/04/2022 Florence, Italy – **Oral presentation** - *Coating cobalt nanorods with gold containing shells.*

Manget2022 11-13/04/2022 Florence, Italy – **Poster contribution** – *Structural and magnetic order modification induced by Co and Ni doping in core@shell wüstite@ferrite nanoparticles*

C'Nano2021 23-25/11/2021 Toulouse, France – **Poster contribution**- *Coating cobalt nanorods with gold containing shells.*

Magnet2021 11-12/02/2021 Florence, Italy – **Poster contribution** – *Tuning the Néel temperature of core@shell wüstite@magnetite nanoparticles by doping with divalent metal ions*

JEMS2020 online 7-11/12/2020 online conference – **Poster contribution** - *Unraveling the mechanism of the one-pot synthesis of exchange coupled Co-based nano-heterostructures with high energy product*

CMD2020GEFES online 31/08-4/09/2020 **Poster contribution** - *Unraveling the mechanism of the one-pot synthesis of exchange coupled Co-based nano-heterostructures with high energy product*

ECMM2019 15-19/09/19 Florence, Italy – **Poster contribution** - *Unraveling the mechanism of the one-pot synthesis of exchange coupled Co-based nano-heterostructures with high energy product*

ICFPM19 Gijon 26-31/05/19 **Oral presentation** - *Unraveling the mechanism of the one-pot synthesis of exchange coupled Co-based nano-heterostructures with high energy product*

Magnet 19 Messina 30/01-1/02/2019 **Oral presentation** - *Controlled design of exchange coupled nano-heterostructures with high energy product*

ISMANAM2018 Roma, 2-6/07/2018, Poster contribution-*A new strategy for designing exchange coupled nano-heterostructures with high energy product*

As co-author

Intermag2022 – New Orleans, USA, 10-14/01/2022 – **Online Oral contribution** - *Exchange coupled magnetic nano-heterostructures with enhanced energy product*

AIM – Advances in Magnetism 2021 virtual conference 13-16/06/2021 – **Oral contribution** - *Exchange coupled magnetic nano-heterostructures with enhanced energy product*

Magnet2021 – Florence, Italy 11-12/02/2021 **Poster contribution** – *Optimizing the magnetic properties of Hard and Soft materials for exchange spring permanent magnets fabrication.*

ECMM 2019 Florence – Italy, 15-18/09/2019 – **Poster Contribution** -*Hard/Soft coupled magnetic nanocomposites for Rare Earth free permanent magnets fabrication*

ICFPM 2019 Gijón – Spain, 27-31/05/2019 – **Oral presentation** - *Exchange coupled core-shell nanoparticles as building blocks for permanent magnet*

Seminar

Exchange coupled nano-heterostructures, presentation as visiting researcher. ICMM/CSIC, Madrid 25/01/2023

Project

ESTEEM3 - Research Grant for the project: An Electron Microscopy Investigation on Core-shell Antiferromagnetic-ferrimagnetic Nano-heterostructures (07/2019)

ESTEEM3 - Research Grant for the project: Electron Microscopy Investigation on Exchange Coupled nano-Heterostructures (05/2019)

Participation to **H2020 EU Project** Anisometric permanent hybrid magnets based on inexpensive and non-critical materials "Amphibian" (PhD Fellowship 2017-2019)

Responsible of grant for industry research with Fresenius Kabi Business Unit API / INSTM-UdR Florence

Participation to **Horizon2020 FET EU Project**, Switchable magneto-plasmonic contrast agents and molecular imaging technologies "**SWIMMOT**" (2020-2024, Post-doc 2021-2022)

Participation to European project INtelligent and Sustaineble Processing of Innovative Rare-Earth magnetS "**INSPIRES**" EIT Raw Materials (2021-2024)

Participation to European Project Computational modelling for long term inter-sectoral advanced knowledge on Non-Newtonian fluids "**COMMON LINK**" (2022-2025)

Other activities

Dissemination activities

CHIMICA VERDE: energie rinnovabili e materiali critici, 09/03/2023, **ICCOM-CNR**, Florence

Magneti volanti, un percorso tra letteratura e scienza, 17/12/2022, **Galileo Museum** in collaboration with **ICCOM-CNR**, Florence

Tutor PLS – OpenLab, from 22/01/2020 to 26/02/2020, University of Florence, Florence, Italy

ScienzEstate2018 - Laboratory activities, 07-08/06/18, University of Florence, Florence, Italy

Tutor-Alternanza scuola lavoro, 04-08/06/2018, University of Florence, Florence, Italy

Educational cooperation

Educationl cooperation in the course of Prof. Matteo Mannini, B015350 (B025) -NANOMATERIALI PER APPLICAZIONI AVANZATE A.A. 2022-2023

Congress organization

Local organizing committee- AlMagn Colloquia - New directionsin spintronics- 23/06/2023 Pisa, Italy

Organizing committee – Magnet2022 - 11-13/04/2022 Florence, Italy

Local organizing committee – Cost-Radiomag Final Meeting - 16-18/10/2018 Florence, Italy

Certifications

Training course for advanced users of Transmission Electron Microscopy 01/2021 – 01/2022 at the Centre De Microcaractérisation Raimond Castaing, Toulouse, France

Training course for advanced users of Transmission Electron Microscopy 05/2019 – 06/2019 at the Instituto Universitario de Investigacion en Nanociencia de Aragon (INA), Zaragoza, Spain

General training to Prevention and Safety at Work under D.Lgs. 81/2008 and Agreement State Regions of 21/12/2011 of 07/25/2012

Personal data

I authorize the use of my personal data pursuant to Legislative Decree 30 June 2003 n. 196 "Code concerning the protection of personal data"

