

# Curriculum Vitæ - Davide Gardini

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## Personal data

Name Davide GARDINI  
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Nationality Italian

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## Education

2005 Doctor of Philosophy (Ph.D.) in Industrial Chemistry, University of Bologna (Italy)  
2001 Master of Science (M. Sc.) Degree in Chemical Engineering, University of Bologna (Italy)

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## Professional Experience

2011-present Researcher at the National Research Council of Italy (CNR) - Institute of Science and Technology for Ceramics (ISTEC), Faenza (Italy)  
2005-2011 Not-permanent Researcher at the National Research Council of Italy (CNR) - Institute of Science and Technology for Ceramics (ISTEC), Faenza (Italy)

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## Research Fields

Colloidal Suspensions, Rheology, Interfaces, Fluid dynamics, Shaping, Nanosafety

1. Colloidal properties of suspensions.
  2. Interactions of ions, surfactants, macromolecules with solid particles.
  3. Rheological behavior of ceramic suspensions.
  4. Interfacial properties of liquids and solids and solid/liquid interactions.
  5. Shaping processes (tape casting).
  6. Coating processes (screen-printing, ink-jet printing, EPD, digital glazing).
  7. Nanostructured materials.
  8. Nanosafety (reduction of the risk of nanomaterials for the human health and the environment).
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## Research Projects

*Collaborator to international and national projects*

2017-2019 Sistemi innovativi, adattivi e sostenibili per l'involucro edilizio ad alte prestazioni energetiche ed acustiche - POR-FESR 2014-2020  
2015-2018 EU Project EUCERMAT – European Ceramic Materials – ERASMUS+ Programme – Strategic Partnerships for higher education (2015-1-FR01-KA203-015209).  
2013-2017 EU Project SUN – Sustainable Nanotechnologies – Large-scale integrating project (FP7-NMP4-20132-LARGE-7-6043015).  
2013 COST ACTION MP0904 (SIMUFER, Recent advances in ferro/piezoelectric and multiferroic-based composites) in collaboration with Jožef Stefan Institute (Ljubljana, Slovenia).  
2012-2015 EU Project SANOWORK – Safe Nano Worker Exposure Scenarios - Collaborative Project (NMP4-SL-2012-280716) [Administrative and Budgetary Project Manager].  
2012-2013 CNR-TUBITAK – Bilateral Project Italy-Turkey in collaboration with Anadolu University (Eskişehir, Turkey)  
2011-2014 EU Project SENERES – Sustainable Energy Research and Development Centre Coordination and Support Actions (FP7-REGPOT-2011-1-286100)  
2008-2010 EUREKA Project DIPIMAM - Development and Implementation of a new Powder Injection Moulding binder system using Advanced Methods (E!4212)

2007-2008	Studio delle proprietà reologiche e colloidali di sistemi dispersi ceramici finalizzato all'ottimizzazione dei processi e dei prodotti ceramici - RSTL – Ricerca Spontanea a Tema Libero (DG.RSTL.073.002)
2006–2009	EU Project ADOPTIC – Additive Optimization for Improved Ceramics - Research Collective Project (COLL-CT-2006-030338)– WP2 Leader “ Production of rheology measurement protocols relevant to the three generic ceramic shaping routes”.
2004-2006	Nano-tecnologie per la realizzazione di micro-componenti per il rilievo delle emissioni dei motori a combustione interna e della qualità dell'aria in ambienti confinati -FIRB – Fondo per gli Investimenti della Ricerca di Base
2003-2005	Sviluppo di celle a combustibile ad ossido solido planari con elettrodo supportante ad elevata area geometrica - FISR – Fondo Integrativo Speciale Ricerca

*National Representative of COST Actions*

2011 – 2016	COST CM1101 - Colloidal Aspects of Nanoscience for Innovative Processes and Materials
2006 – 2011	COST D43 - Colloid and Interface Chemistry for Nanotechnology

**Peer-reviewer**

Ceramics International  
 Colloids and Surfaces A: Physicochemical and Engineering Aspects  
 Journal of the American Ceramic Society  
 Materials Science and Engineering B  
 Coatings

**Industrial Projects**

Collaborator to more than 20 industrial projects.

**Training Courses**

- Inkjet Training Course – Fribourg (Switzerland), 01-05/02/2016.
- Verso H2020, IN Srl – Faenza (Italy), 11/2013.
- Phase Diagrams, Thermodynamic course held by Prof. Andreas Glaeser – Faenza (Italy), 04/10-11/11/2010.
- NanoMetro Training – Course on powder characterization, Lausanne/Leysin (Switzerland), 29-30/01/2008.
- SURUZ Workshop: Surfactants and Dispersed Systems - Krakow (Poland), 21/03/2007.
- M-ASTER Lab – Diventare protagonisti dell'innovazione – Bologna (Italy), 12/2006 – 11/2007.
- Finanziamento e management dei progetti di ricerca – Faenza (Italy), 16, 18, 19/05/2005.
- Scuola GRICU di Metodi Matematici per l'Ingegneria Chimica - MEMIC 2005, Bologna (Italy), 4-8/04/2005.
- V Edizione della Scuola di Reologia “Corso di formazione e aggiornamento per ricercatori e tecnici industriali” - San Donato Milanese (Italy), 21-24/01/2003.
- 8th European School on Rheology – Rheology for the Process Industries, Torremolinos (Spain), 21-24/04/2002.

**Training Activities**

*Seminars*

- Colloidal processing of ceramics, Seminar in the framework of the Ph. D. Course in Industrial Chemistry (2007) and Chemical Sciences (2008, 2010-2015, 2017) of the University of Bologna.
- Cenni su processi colloidali e sospensioni ceramiche, Seminar in the framework of the 2nd level Master in Advanced Materials for Aerospace Applications, Faenza (Italy), 16/09/2014.

- An introduction to rheology, Seminar in the framework of the Bilateral project CNR-TUBITAK, Eskişehir (Turchia), 23/10/2013.
- Colloidal processing of ceramics, Seminar in the framework of the course “Teaching and Training Internship: Innovative Production Technologies for Nanostructured Ceramics” – Faenza (Italy), 25/09/2012.
- An introduction to rheology / An introduction to rheometry / An introduction to rheology of concentrated suspensions, Seminars in the framework of the project SENERES (FP7-REGPOT-2011-1-286100) – Boguchwala (Poland), 20-21/06/2012.
- Introduzione alla reologia: a cosa serve e cosa si misura, Contribution to “Seminario di Reologia applicata alla Ceramica” - Fiorano Modenese (Italy), 12/07/2007.
- Effetto di additivi organici sulla stabilità e sulle proprietà reologiche di sospensioni ceramiche, Workshop "La reologia nel processo ceramico", Modena (Italy), 31/03/2005.

*Co-relator of Master Degree*

- Andrea Buttarelli, Experimentation to reuse rockwool with eco-compatible additives to product panels for thermal insulation, Faculty of Civil Engineering, University of Parma (2010)
- Simone Cavallini, Testing for the reuse of rockwool for the implementation of innovative products in the construction industry, Faculty of Civil Engineering, University of Parma (2011)
- Mattia Valentini, Experimental study on recycled rockwool panels and chemical-physics characterization, Faculty of Engineering, University of Parma (2011)
- Alessio Spegni, Colloidal approach for the preparation of TiO<sub>2</sub>-based nanostructured photocatalysts, Faculty of Industrial Chemistry, University of Bologna (2011)

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## Publications

Papers in ISI Journals: 24

Papers in non-ISI Journals: 26

Books and Chapters: 1 book (in Italian), 4 chapters

*Papers in ISI Journals*

h-index: 9 (ISI & Scopus), 10 (Google Scholar)

No. citations: 231 (ISI); 254 (Scopus); 397 (Google Scholar)

1. Novel magnetodielectric cobalt ferrite-titania-silica ceramic composites with tunable dielectric properties, P. Galizia, D. Gardini, S. Ortelli, C. Capiani, M. Anbinderis, R. Grigalaitis, G. Maizza, C. Galassi, *Ceramics International*, 42 (15), 16650-16654 (2016)
2. Processing and characterization of screen printing Ba<sub>0.5</sub>Sr<sub>0.5</sub>Co<sub>0.8</sub>Fe<sub>0.2</sub>O<sub>3-δ</sub> inks, M. Gromada, D. Gardini, P. Galizia, C. Galassi, *Bulletin of Materials Science*, 39 (2), 559-567 (2016)
3. Ink-jet printability of aqueous ceramic inks for digital decoration of ceramic tiles, G.L. Gungör, A. Kara, D. Gardini, M. Blosi, M. Dondi, C. Zanelli, *Dyes and Pigments*, 127, 148-154 (2016)
4. Bilayer thick structures based on CoFe<sub>2</sub>O<sub>4</sub>/TiO<sub>2</sub> composite and niobium-doped PZT obtained by electrophoretic deposition, P. Galizia, I.V. Ciuchi, D. Gardini, C. Baldisserri, C. Galassi, *Journal of the European Ceramic Society*, 36, 373-380 (2016)
5. Mineralogical composition and particle size distribution as a key to understand the technological properties of Ukrainian ball clays, C. Zanelli, C. Iglesias, E. Dominguez, D. Gardini, M. Raimondo, G. Guarini, M. Dondi, *Applied Clay Science*, 108, 102-110 (2015)
6. Micronizing Ceramic Pigments for Inkjet Printing: Part II. Effect on Phase Composition and Colour, C. Zanelli, G.L. Gungör, A. Kara, M. Blosi, D. Gardini, G. Guarini, M. Dondi, *Ceramics International*, 41, 6507-6517 (2015)
7. Micronizing Ceramic Pigments for Inkjet Printing: Part I. Grindability and Particle Size Distribution, G.L. Gungör, A. Kara, M. Blosi, D. Gardini, G. Guarini, C. Zanelli, M. Dondi, *Ceramics International*, 41, 6498-6506 (2015)

8. Ceramic Ink-Jet Printing for Digital Decoration: Physical Constraints for Ink Design, D. Gardini, M. Blosi, C. Zanelli, M. Dondi, *Journal of Nanoscience and Nanotechnology*, 15, 3552-3561 (2015)
9. Titanium Dioxide Nanoparticles Enhance Macrophage Activation by LPS Through TLR4-dependent intracellular pathway, M.G. Bianchi, M. Allegri, A.L. Costa, M. Blosi, D. Gardini, C. Delpivo, A. Prina-Mello, L. Di Cristo, O. Bussolati, E. Bergamaschi, *Toxicology Research*, 4, 385-398 (2015)
10. Multiple approach to Test Nano TiO<sub>2</sub> photo-activity, S. Orтели, M. Blosi, C. Delpivo, D. Gardini, M. Dondi, I. Gualandi, D. Tonelli, V. Aina, I. Fenoglio, A.A. Gandhi, S.A.M. Tofail, A.L. Costa, *Journal of Photochemistry and Photobiology A: Chemistry*, 292, 26-33 (2014)
11. Silica-coating as Protective Shell for the Risk Management of Nanoparticles, D. Gardini, M. Blosi, C. Delpivo, S. Orтели, A.L. Costa, *Journal of Physics: Conference Series*, 429 (1), Art. No.012052 (2013)
12. A Controlled Colloidal Destabilization Approach for the Electrophoretic Deposition (EPD) from Cobalt Ferrite and Magnetite Nanoparticles Suspensions in Diethylene Glycol, C. Baldisserrri, D. Gardini, C. Galassi, *Key Engineering Materials*, 507, 85-88 (2012)
13. Synthesis of Nanostructured Magnetic Photocatalyst by Colloidal Approach and Spray-Drying Technique, A.L. Costa, B. Ballarin, A. Spegni, F. Casoli, D. Gardini, *Journal of Colloid and Interface Science*, 388 (1), 31-39 (2012)
14. Ceramic Pigments for Digital Decoration Inks: An Overview, M. Dondi, M. Blosi, D. Gardini, C. Zanelli, *CFI Ceramic Forum International*, 89 (8-9), E59-E64 (2012)
15. Sharp Silicon/Lead Zirconate Titanate Interfaces by Electrophoretic Deposition on Bare Silicon Wafers and Post-Deposition Sintering, C. Baldisserrri, D. Gardini, C. Galassi, *Sensors and Actuators A: Physical*, 174 (1), 123-132 (2012)
16. An analysis of Current Transients During Electrophoretic Deposition (EPD) from Colloidal TiO<sub>2</sub> Suspensions, C. Baldisserrri, D. Gardini, C. Galassi, *Journal of Colloid and Interface Science*, 347 (1), 102-111 (2010)
17. Flow Properties of PLZTN Aqueous Suspensions for Tape Casting, D. Gardini, M. Deluca, M. Nagliati, C. Galassi, *Ceramics International*, 36 (5), 1687-1696 (2010)
18. Slip Casting of ZrB<sub>2</sub>-SiC Composite Aqueous Suspensions, V. Medri, C. Capiani, D. Gardini, *Advanced Engineering Materials*, 12 (3), 210-215 (2010)
19. Predicting the Initial Rate of Water Absorption in Clay Bricks, M. Raimondo, M. Dondi, D. Gardini, G. Guarini, F. Mazzanti, *Construction and Building Materials*, 23 (7), 2623-2630 (2009)
20. On the Possibility of Silicon Nitride as a Ceramic for Structural Orthopaedic Implants. Part II: Chemical Stability and Wear Resistance in Body Environment, M. Mazzocchi, D. Gardini, P.L. Traverso, M.G. Faga, A. Bellosi, *Journal of Materials Science: Materials in Medicine*, 19 (8), 2889-2901 (2008)
21. Nano-sized Ceramic Inks for Drop-on-Demand Ink-Jet Printing in Quadrichromy, D. Gardini, M. Dondi, A.L. Costa, F. Matteucci, M. Blosi, C. Galassi, G. Baldi, E. Cinotti, *Journal of Nanoscience and Nanotechnology*, 8 (4), 1979-1988 (2008)
22. Key Role of Milling in the Optimization of TiO<sub>2</sub> Nanoinks, A. Sanson, D. Gardini, G. Montanari, C. Galassi, E. Roncari, *Journal of Materials Research*, 21 (6), 1561-1569 (2006)
23. Stress Effects on Mass Transport in Polymers: A Model for Volume Relaxation, E. Piccinini, D. Gardini, F. Doghieri, *Composites Part A: Applied Science and Manufacturing*, 37 (4), 546-555 (2006)
24. Rheology of Hydroxyapatite Dispersions, D. Gardini, C. Galassi, R. Lapasin, *Journal of the American Ceramic Society*, 88 (2), 271-276 (2005)

*Books and Chapters of Books*

- Chapter 6 - The Central Role of Interparticle Forces in Colloidal Processing of Ceramics (D. Gardini, C. Baldisserrri, C. Galassi) – pagg. 131-153 in *Colloid and Interface Chemistry for Nanotechnology*, P. Kralchevsky, R. Miller, F. Ravera (Eds.), ISBN: 978-1-4665-6905-8, CRC Press, Taylor & Francis Group (2013)

- Chapter 2 – Rheology of dispersed ceramic systems (D. Gardini, C. Galassi, R. Lapasin) – pp. 35-61; Chapter 5 – Rheological additives (D. Gardini, C. Galassi) – pp. 129-154; Chapter 14 – Beyond the triangular procedure (D. Gardini, P. Prampolini) – pp. 393-400 in *Rheology Applied to Ceramics (theory and practice)*, SALA Editrice, Modena (2006) (In Italian and English)
- *Reologia, Colloidi e Sospensioni Ceramiche* - D. Gardini, C. Galassi - ISBN 88-8080-64-7, CNR, Roma (2006) (in Italian)

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## Conferences and Workshops

### *Oral communications*

Communications: 22 (14 orals [1 keynote and 2 invited lectures], 8 posters [1 award])  
 Communications as co-author: 44 (29 orals, 15 posters)

1. From Design to Properties Evolution of Nanomaterials in a Safer-by-Design Framework, D. Gardini, C. Baldisserrri, M. Blosi, S. Ortelli, A.L. Costa, NanoImpact, Conclusions on the environmental impacts of engineered nanomaterials – 12-17 March 2017, Monte Verità – Ascona (Switzerland)
2. Ink Technology for Digital Decoration: An Overview, D. Gardini, M. Blosi, C. Zanelli, M. Dondi (INVITED LECTURE), CIMTEC 2014, 13rd International Ceramics Congress, 2014 – Montecatini Terme (Italy)
3. Integration of safer by design nanoproducs into real industrial case studies, D. Gardini, NANOREG Workshop - Industrial Technologies 2014 – 3rd International Conference on Industrial Technologies Research and Innovation, 9-11 April 2014, Athens (Greece)
4. Nanostructuring Fe<sub>3</sub>O<sub>4</sub>-TiO<sub>2</sub> composites by colloidal approach coupled with spray-drying, A.L. Costa, A. Spegni, B. Ballarin, M.C. Cassani, D. Gardini, SIMUFER (COST Action MP0904) Workshop – Recent advances in ferro/piezoelectric and multiferroic-based composites, 22-23 April 2013, Faenza (Italy)
5. Silica-coating as protective shell for the risk management of nanoparticles, D. Gardini, M. Blosi, C. Delpivo, S. Ortelli, A.L. Costa, Nanosafe 2012 – 3rd International Conference on Safe Production and Use of Nanomaterials, 13-15 November 2012, Grenoble (France)
6. SANOWORK – Safe nano worker exposure scenarios, D. Gardini, NanoSafety Cluster Workshop - Safe Implementation of Nanotechnologies: Common Challenges, 29-31 May 2012, Grenoble (France)
7. A Colloidal Approach Coupled with Spray-Drying Technique as for Nanostructuring, D. Gardini (KEYNOTE LECTURE), ECIS 2011, 25th Meeting of the European Society of Colloid and Interfaces, 2011 – Berlin (Germany)
8. Simple Rheological Tests and Protocols for SME Ceramic Producers, C. Galassi, D. Gardini (INVITED LECTURE), CIMTEC 2010, 12th International Ceramics Congress, 2010 – Montecatini Terme (Italy)
9. Comportamento tissotropico di inchiostri serigrafici di ceramiche piezoelettrici, D. Gardini, E. Mercadelli, C. Galassi, XI Convegno Nazionale della Società Italiana di Reologia, 23-26/05/2010 – Trieste (Italy)
10. Analisi reologica di paste catodiche per celle a combustibile, D. Gardini, C. Galassi, M. Bertoldi, S. Ceschini, X Convegno Nazionale della Società Italiana di Reologia, 18-21/05/2008 – Ravenna (Italy)
11. Comparison of the Particle-Size Distribution Obtained with Different Techniques for an Hydroxyapatite Powder, D. Gardini, C. Galassi, COST 539 (ELENA) – NanoMetro Workshop - 31/01/2008, Leysin (Switzerland)
12. Wettability of aqueous media on silicon nitride-based ceramics, D. Gardini, M. Mazzocchi, M.G. Faga, A. Bellosi, COST D43 Workshop: Functional Interfaces – Theory and Experiment - 19-20/03/2007, Krakow (Poland)
13. Effetto della macinazione sulla reologia di paste serigrafiche, D. Gardini, A. Sanson, G. Montanari, C. Galassi, E. Roncari, IX Convegno Nazionale della Società Italiana di Reologia, 20-23/09/2006 – Zambrone (Italy)
14. Studio di sospensioni acquose di PZT-LN per collaggio su nastro, M. Deluca, M. Nagliati, D. Gardini, C. Galassi, R. Lapasin, VIII Convegno Nazionale della Società Italiana di Reologia, 19-22/05/2004 – Sant'Angelo di Ischia (Italy)

Posters

1. Inorganic phases dopants of electrospun keratin nanofibrous media, D. Gardini, A.L. Costa, S. Ortelli, M. Blosi, A. Varesano, C. Vineis, G. Mazzucchetti, Industrial Technologies 2014, 08-11/04/2014, Athens, Greece
2. Dose-metric Issues of Commercial Engineered Nanoparticles, D. Gardini, M. Blosi, C. Delpivo, S. Ortelli, E. Bergamaschi, M.G. Bianchi, M. Allegri, O. Bussolati, A.L. Costa, QNANO 2013 - 2nd QNano Integrating Conference, 27/02-01/03/2013, Prague, Czech Republic (AWARDED FOR BEST POSTER PRESENTATION)
3. Silica-coating as protective shell for the risk management of nanoparticles, D. Gardini, M. Blosi, C. Delpivo, A.L. Costa, ECIS 2012 – 26th Conference of the European Colloid and Interface Society, 02-07/09/2012, Malmö/Lund, Sweden
4. Misure viscometriche su sospensioni di allumina in paraffina fusa, D. Gardini, C. Galassi, XII Convegno Nazionale dell'Associazione Italiana di Reologia, 03-06/07/2012, Ustica, Italy
5. The Flow Behaviour of Clay Suspensions, D. Gardini, C. Galassi, XIV International Clay Conference, 14–20/06/2009, Castellaneta Marina, Italy
6. Titania Screen Printing Inks: Influence of the Dispersing Medium on Rheology, D. Gardini, A. Sanson, E. Roncari, C. Galassi, 2nd International Congress on Ceramics, 29/06 – 04/07/2008, Verona, Italy
7. The Influence of Dispersing Medium on Rheology of Titania Screen Printing Inks, D. Gardini, A. Sanson, E. Roncari, C. Galassi, 4th Annual European Rheology Conference - AERC 2007, 12-14/04/2007, Naples, Italy
8. Rheology of Hydroxyapatite Dispersions, D. Gardini, C. Galassi, R. Lapasin, 1st Annual European Rheology Conference - AERC 2003, 11-13/09/2003, Guimarães, Portugal

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