

# CURRICULUM VITAE

EUROPEAN FORMAT

## PERSONAL INFORMATION

Name, Surname	<b>Adriana Bernardi</b>
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Nationality	Italian
Place and Date of birth	Cittadella (Padova, Italy), 14 December 1955

## WORK EXPERIENCE

### Head of Unit of Institute of Atmospheric Sciences and Climate in Padua

Senior Researcher at CNR-Institute of Atmospheric Sciences and Climate

Moreover:

- Coordinator and participant of EU FP6, FP7 and H2020 projects
- Contract Professor at the University of Ferrara since 2000, Faculty of Mathematical, Physical and Natural Sciences, Degree course in "Sciences and technologies for Cultural Heritage" (degree of II level) and "Technologies for Cultural Heritage" (degree of I level)
- Contract Professor at the University of Catania between 2005 and 2007 Degree course in "Science and Advanced Technologies applied to the conservation and restoration of Cultural Heritage".
- Responsible of numerous national and international research projects
- Promoter of a spin-off in the field of environmental monitoring and use of renewable energy in buildings, in particular historical ones. Actually shareholder.
- Coordinator of WG 4 "Energy and Environment" within Focus Area Cultural Heritage (FACH) of the European platform ECTP and representative of FACH within ECTP-PPP-E2B (Energy efficient buildings)
- Coordinator of Heritage and Regeneration (H&R) in ECTP
- Coordinator of the European Cluster NanomeCH "Nano and advanced materials for cultural heritage"
- Member of national and international committees for Standards on Cultural Heritage (UNI and CEN)
- Member of the Italian Consultation Panel for JPI on Cultural Heritage and global change
- Evaluator for the European Commission during FP5 and H2020.
- Evaluator for the Italian Ministry
- Editor of a national journal and member of the editorial board of an international journal
- Teacher in numerous other specialist courses / masters / seminars in national and international private / public bodies
- Supervisor of numerous thesis

## EDUCATION AND TRAINING

1978-79  
University of Padua  
Degree in Physics

## LANGUAGES

Italian mother-tongue  
English optimum level  
French Optimum level

## RESEARCH ACTIVITIES

Research sectors      Climate and microclimate for the protection of Cultural Heritage, environmental impact on heritage materials, Cultural Heritage management and conservation, technologies for the assessment and monitoring of damage, materials/technologies for the protection of Cultural Heritage, energy efficiency in historic buildings, human comfort.

### Recent Scientific Activities.

#### European projects

- Coordinator of H2020 EU project “Innovative pre-fabricated components including different waste construction materials reducing building energy and minimising environmental impacts” (InnoWEE) (GA no. 723916), (2016-2020)
- Coordinator of H2020 EU project “Cheap and Efficient Application of reliable Ground Source Heat exchangers and Pumps” (Cheap-GSHPs) (GA no. 657982), (2015-2019)
- Coordinator of FP7 EU project “Nano-systems for the conservation of immovable and moveable polymaterial Cultural Heritage in a changing environment” (NANOMATCH) (GA no. 2183182), (2011-2014)
- Coordinator of FP7 EU project “Technologies and tools to prioritize Assessment and diagnosis of air pollution impact on immovable and movable Cultural Heritage” (TeACH) (GA no. ENV-2007-212458), (2008-2011)
- Coordinator of FP5 EU project 2001-2004 “Determination of Conditions to Prevent Weathering due to Condensation, Particle Deposition and Micro-Organism Growth on Ancient Stained Glass Windows with Protective Glazing” (VIDRIO) (GA no. EVK4-CT-2001-00045), (2001-2004)

*and*

- Scientific responsible within the H2020 EU project “Development of a multi-stakeholder dialogue platform and Think tank to promote innovation with Nature based solutions” (ThinkNature). H2020- SC5-10-2016. (GA n. 730338), (2016-2019)
- Scientific responsible within the FP7 EU project “Energy efficient & Cost competitive retrofitting solutions for Shopping buildings” (ECOSHOPPING) (GA no. NMP2-LA-2013-609180), (2013-2017)
- Scientific responsible within the FP7 EU project “Energy Efficiency for EU Historic Districts Sustainability” (EFFESUS) (GA no. 314678), (2012-2016)
- Scientific responsible within the FP7 EU project “Multi-source Energy Storage System Integrated in Buildings” (MESSIB) (GA no. NMP-2007-211624), (2009-2013)
- Scientific responsible within the FP7 EU project “Advanced Infrastructure for Knowledge Based Services for Buildings Restoring” (H-KNOW) (GA no. NMP-2007-214567), (2009-2011)
- Scientific responsible within the FP6 EU project “Advanced Infrastructure for Knowledge Based Services for Buildings Restoring” ENV-2006-044208, (2006)

#### International projects

- Scientific responsible of “Analysis of the data of the microclimatic monitoring at the Cathedral of Santiago de Compostela”. (2009-2011)
- Scientific responsible of “Caractérisation dynamique des paramètres du microclimat sur les sites de prelevement à la grotte de Lascaux (France), (2008-2009)
- Scientific responsible of “Technical assistance for the collection of Environmental data at Hagr Quin and Mnajdra Temples, Qrendi, Malta”, (2005-2006)
- Scientific responsible of “Study of the thermo-hygro-metrical exchanges between environmental air stocked bags”, (2005-2006)
- Scientific responsible of “Microclimatic study of overseas shipments of packaged goods” (2004-2006)
- Scientific responsible of “Microclimatic study of bulk transport and unloading of crystalline dextrose” (2004-2005)
- Scientific responsible of “Microclimatic study of bulk transport and unloading of modified starches” (2004-2005) “Microclimatic study of the crystalline dextrose process” (2004-2005)
- Scientific responsible of CRAFT “ Production and control of heating systems suitable for the well-being of people and for the conservation of the works of art preserved in churches”, (1998-1999)

### **National projects**

- Scientific responsible of “Microclimatic monitoring of the cupola of the S. Bernardino basilica– L’Aquila (Italy)”. (2016-2017)
- Scientific responsible of “Microclimatic monitoring at Tempietto Longobardo in Cividale del Friuli (Italy)”, (2008-2012)
- Scientific responsible of “Microclimatic monitoring at the Museum of Opera di Santa Croce – Florence (Italy)” (2009-2011)
- Scientific responsible of project “Spin-off for the construction of innovative meteorological and microclimatic sensors for monitoring in extreme environment”. (2006-2010)
- Scientific responsible of project “Microclimatic measurements at the Petrarca Tomb in Arquà Petrarca (PD) (Italy)”, (2003-2004)
- Scientific responsible of project “Microclimatic measurements at the courtyard of Michelozzo in Palazzo Vecchio (Florence- Italy)”, (2004)
- Scientific responsible of project “Construction and validation of innovative instruments for temperature and humidity” (2000)
- Scientific responsible of project “Project on effects on microclimate after an installation of a heating system in the S. Giovanni Evangelista Church in Lecce (Italy)”, (1998-2000)
- Scientific responsible of project “Interaction between pollutants, environment and cultural heritage (1990-1993)
- Scientific responsible of project “Pollutants transport across the Alps”, Strategic Project EUROTRAC. (1987-1988)
- Scientific responsible of project “Analysis of the meteorological maps in occasion of special pollution episodes at Porto Marghera-Mestre and Venice”. (1983)

### **Other**

- Member for the National standards UNI GL4 (Beni Culturali - Ambiente)
- Member of European standards CEN/TC 346/WG8 and CEN/TC 346/WG 12
- Editorial Director of the journal Bollettino Geofisico
- Member of the Editorial Advisory Board of the international Journal of Cultural Heritage

Papers on ISI journals (from 2010):

- F.Becherini, J. Cassar, M.Galea, A.Bernardi, 2016, Evaluation of the Shelters over the Prehistoric Megalithic Temples of Malta: Environmental Considerations, *Environmental Earth Sciences*, (in press)
- F.Becherini, A. Bernardi, M.C.Di Tuccio, A. Vivarelli, L.Pockelè, S. De Grandi, S. Fortuna, A. Quendolo, 2016, Microclimatic monitoring for the investigation of the different state of conservation of the stucco statues of the Longobard Temple in Cividale del Friuli (Udine, Italy). *Journal of Cultural Heritage*, 18, 375–379
- A. Bernardi, F. Becherini, M.D. Romero-Sanchez, A. Lopez-Buendia, A. Vivarelli, L. Pockelè, S. De Grandi, 2013: Evaluation of the effect of Phase Change Materials technology on the thermal stability of Cultural Heritage objects. *Journal of Cultural Heritage*, 15, 470-478.
- F. Becherini, A. Bernardi, A. Vivarelli, L. Pockelè, S. De Grandi, A. Gandini, O. García, M. Zubiaga, J. C. Espada Suárez, B. Sperandio, 2013: Environmental Risk Assessment and Preventive Conservation Strategy for the Porch of the Glory, Santiago of Compostela Cathedral. *Journal of Environmental Science and Engineering B2*, 299-303.
- A. Bernardi, F. Becherini, M. Verità, P. Ausset, M. Bellio, U. Brinkmann, H. Cachier A. Chabas, F. Deutsch, M.P. Etcheverry, F. Geotti Bianchini, R.H.M. Godoi, V. Kontozova-Deutsch, R.A. Lefèvre, T. Lombardo, P. Mottner, C. Nicola, I. Pallot Frossard, S. Rölleke, H. Römich, G. Sommariva, M. Vallotto, R. Van Grieken, 2013: Conservation of stained glass windows with protective glazing: main results from the European VIDRIO research programme. *Journal of Cultural Heritage*, 14, 527-536.
- Bernardi A., Becherini F., De Grandi S., Pockelè L., 2012: Conservation of stained glass windows: an innovative user-friendly portable device coming from the EU-VIDRIO Project. *Journal of Environmental Science and Engineering B*, 1B, 4, 2012, 519-526.
- A. Bernardi, M. Favaro, T. Nijland, O. Garcya, V. Detalle, K. Wittstadt, M. D. Romero Sanchez, L. Pockelè, B. Kunday, B. Verhey, U. Brinkmann, G. de' Micheli, M. Labouré, B. Mueller, I. D. Olteanu, 2012. Nanomatch: A European Project to Develop Consolidants Through the Synthesis of New Inorganic Nanomaterials for the Conservation of Built Heritage. *International Journal of Heritage in the Digital Era*, 1, 2012, 307-312.
- Becherini F., Bernardi A., Frassoldati E., 2010. Microclimate inside a semi-confined environment: valuation of suitability for the conservation of heritage materials. *Journal of Cultural Heritage*, 11, 471-476. ISSN: 1296-2074, DOI: 10.1016/j.culher.2010.01.005.
- Nava S., Becherini F., Bernardi A., Bonazza A., Chiari M., García Orellana I. , Lucarelli F., Ludwig N., Migliori A., Sabbioni C., Udisti R., Valli G., Vecchi R., 2010: An integrated approach to assess air pollution threats to cultural heritage in a semi-confined environment: The case study of Michelozzo's Courtyard in Florence (Italy). *Science of the total environment*, 408, 1403-1413.

Papers on peer reviewed journals (from 2010):

- I. Natali, P. Tomasin, F. Becherini, A. Bernardi, C. Ciantelli, M. Favaro, O. Favoni, V.J. Forrat Pérez, I.D. Olteanu, M.D. Romero Sanchez, A. Vivarelli, A. Bonazza, 2015: Innovative consolidating products for stone materials: field exposure tests as a valid approach for assessing durability. VIII Congresso Nazionale di Archeometria, Scienze e Beni Culturali: stato dell'arte e prospettive, Bologna 5 - 7 February 2014. *Heritage Science* 2015, 3:6.
- M.C. Di Tuccio, N. Ludwig, A. Bernardi, 2015: Indagini termografiche del quadro fessurativo della statua in materiale composito: il Ratto delle Sabine. VIII Congresso Nazionale di Archeometria, Scienze e Beni Culturali: stato dell'arte e prospettive, Bologna 5 - 7 February 2014. *Heritage Science* 2015, 3:10.

Books:

- Bernardi A., 2008: *Microclimate inside Cultural Heritage Buildings*. Il Prato. 171 pp. ISBN 978-88-6336-032-5
- Bernardi A., 2003: *Conservare opere d'arte: Il microclima negli ambienti museali*. Il Prato. 143 pp. ISBN 88-87243-61-1

Book's chapter (from 2010):

- A. Bernardi, 2016, Indoor Climate and Energy Requirements in Historical Buildings, Cultural Heritage from Pollution to Climatic Change, Ed. Lefevre and Sabbioni, Edipuglia 2016
- M. Favaro, M. Chiurato, P. Tomasin, F. Ossola, N. El Habra, I. Svensson, E. Beckers, V.J. Forrat Pérez, M.D. Romero Sanchez, A. Bernardi, 2014: Calcium and magnesium alkoxides for conservation treatment of stone and wood in built heritage. Proceedings "Built Heritage: Monitoring Conservation Management", Milan, 18-20 November 2013, L.Toniolo, M. Boriani and G. Guidi Editors, Springer 2014, 413-422.

Conference proceedings (from 2010):

- Adriana Bernardi, Michele De Carli, Maria Di Tuccio, Giuseppe Emmi, Antonio Galgaro, Samantha Graci, Sebastian Pera, Arianna Vivarelli, Angelo Zarrella, 2016, A data base for European climatic data for energy potentials and mapping, 12th REHVA World Congress CLIMA 2016, Aalborg (Denmark May 2016)
- Borja Badenes, Marco Belliardi, Adriana Bernardi, Michele De Carli, Maria Di Tuccio, Giuseppe Emmi, Antonio Galgaro, Samantha Graci, Luc Pockele, Arianna Vivarelli, Sebastian Pera, Javier F. Urchueguía, Angelo Zarrella, 2016, Definition of Standardized Energy Profiles for Heating and Cooling of Buildings, 12th REHVA World Congress CLIMA 2016, (Denmark May 2016)
- A. Bernardi, F. Becherini, A. Vivarelli, M. Favaro, M. Chiurato, P. Tomasin, E. Bourguignon, V. Detalle, G. Poulet, O. Garcia, I. Svensson, L. Pockelè, S. De Grandi, R. Van Hees, T. Nijland, B. Lubelli, M. D. Romero, V.J. Forrat Perez, G. Schottner, U. Brinkmann, M. Hauck, B. Moeller, A. Geiss, I.D. Olteanu, M. Labouré, M. Pancani, 2015: New Inorganic Consolidants for the Restoration Market: Results from Nanomatch EU Project. Abstract Book 2015 "Practical Philosophy, or Making Conservation Work", 43rd Annual Meeting American Institute for Conservation of Historic and Artistic Works, Miami (Florida), 13-16 May 2015.
- M. C. Di Tuccio, S. De Grandi, A. Vivarelli, F. Becherini, L. Pockelè, A. Bernardi, 2015: A new approach of the surface temperature measurement for a preventive conservation of the work of arts. EGU General Assembly 2015, Vienna 12-17 April 2015. Geophysical Research Abstracts, 17, EGU2015-PREVIEW, 2015.
- F. Becherini, M. C. Di Tuccio, A. Vivarelli, A. Bernardi, 2014: Microclimatic monitoring of the Santa Croce Museum in Florence: environmental risk assessment and preventive conservation strategy. ESRARC 2014 "VI European Symposium on Religious Art, Restoration & Conservation", Florence (Italy), 9-11 June 2014. Proceedings book, O.A. Cuzman, R. Manganelli Del Fa, P. Tiano (Eds.), KermesQuaderni, Nardini Editore.
- Bonazza A., Natali I., Becherini F., Bianchin S., Bourguignon E., Brinkmann U., Favaro M., Gambirasi A., Labouré M., Lubelli B., Olteanu I., Pancani M., Romero M.D., Van Hees R., Bernardi A.: Climate impact and innovative materials for the preservation of Built Heritage: the EC NANOMATCH project. Proceedings "BuiltHeritage 2013", Milan (Italy), 18-20 November 2013.
- A. Bernardi, F. Becherini, A. Vivarelli, C. Ghiretti, E. Mendez Bertolo, L. Pockelè, M.D. Romero-Sánchez, N. Tellado, R. Wansdronk, 2013: Application of innovative technologies for energy storage to Cultural Heritage buildings. Proceedings "BuiltHeritage 2013", Milan (Italy), 18-20 November 2013.
- T. Brostrom, A. Bernardi, A. Egusquiza, J. Frick, M. Kahn, 2013: A method for categorization of European historic districts and a multiscale data model for the assessment of energy interventions. EWCHP2013, Bozen (Italy), 16-18 September 2013, 153-158.
- M. Favaro, M. Chiurato, P. Tomasin, F. Ossola, N. El Habra, N. Brianese, I. Svensson, E. Beckers, V.J. Forrat Pérez, M.D. Romero Sanchez, G. Oriol, E. Bourguignon, A. Bernardi, 2013: Alkaline hearth alkoxides for conservation treatment of stone and wood in built heritage. EWCHP2013, Bozen (Italy), 16-18 September 2013, 105-112.
- Bernardi A., Becherini F., M.D. Romero Sanchez, A. Lopez-Buendia, A. Vivarelli, P. Moretti, G. Baldisseri, C. Ghiretti, L. Pockelè, 2013: Adaptation of energy storage systems to Cultural Heritage: the application of Phase Change Materials technology to historical buildings and objects. EWCHP2013, Bozen (Italy), 16-18 September 2013, 5-10.
- Becherini F., Bernardi A., M.D. Romero Sánchez, A. Vivarelli, L. Pockelè, S. De Grandi, 2012: Study of PCM Technology for Application to Cultural Heritage Objects. Congress "Indoor Air Quality In Heritage and Historic Environments", London (United Kingdom), 17-20 June 2012.
- Becherini F., Bernardi A., Sperandio B., Espada Suárez J.C, Zubiaga M., Gandini A., O. García, Vivarelli A., Pockelè L., De Grandi S., 2012: Multidisciplinary approach for the identification of the environmental risks and the assessment of the preventive conservation strategy for the Portico de la Gloria, Cathedral of Santiago de Compostela (Spain). International congress "Science and Technology for the Conservation of Cultural Heritage", Santiago de Compostela (Spain), 2-5 October 2012, Ed. Servicio de Publicacions e Intercambio Científico,

Santiago de Compostela (Spain), 26.

- Becherini F., Bonazza A., Bernardi A., Ozga I., Pockelè L., De Grandi S., 2012: Color Change Monitoring to Evaluate Pollution Impact on Architectural Surfaces. Cultural Heritage preservation. EWCHP 2012, Kjeller (Norway) 24-26 September 2012, Ed. TLAS, Fjellhamar (Norway), 7-11.

- Bernardi A., M. Favaro, T. Nijland, O. García, V. Detalle, K. Wittstadt, M.D. Romero Sanchez, L. Pockelè, B. Kunday, B. Verhey, U. Brinkmann, G. de' Micheli, M. Labouré, B. Möller, I.D. Olteanu, 2012: Nanomatch: A European Project to Develop Consolidants Through the Synthesis of New Inorganic Nanomaterials for the Conservation of Built Heritage. "EuroMed2012", Cyprus, 29 October – 3 November 2012, M. Ioannides et al. (ed.), 307-312.

- Bernardi A., Becherini F., Bonazza A., Krupinska B., Pockelè L., Van Grieken R., De Grandi S., Ozga I., Jose Veiga Rico A., Garcia Mercero O., Vivarelli A., 2012: A methodology to monitor the pollution impact on historic buildings surfaces: the TeACH project. "EuroMed2012", Cyprus, 29 October – 3 November 2012, M. Ioannides et al. (ed.), Springer-Verlag Berlin Heidelberg, 765–775.

- Becherini F., Bernardi A., Favaro M., Pockelè L., De Grandi S., 2011: New technologies for energy storage applied to Cultural Heritage buildings: the microclimatic monitoring of Santa Croce Museum in Florence. International Conference "Ethos, Logos, Pathos, 39th AIC Annual Meeting", Philadelphia (USA), 31 May – 3 June 2011, 44.

- Bonazza A., Becherini F., Bernardi A., Ozga I., Sabbioni C., Pockelè L., De Grandi S., 2011: Technologies for monitoring present and future pollution impact on cultural heritage: The EC TEACH project. 7th International Conference "Science and Technology In Archeology and Conservation", Workshop "Documentation and Conservation of Stone deterioration in Heritage Places", Petra (Jordan), 7-11 December 2010, 56-63.

- Bernardi A., Becherini F., M. Favaro, Pockelè L., De Grandi S., 2011: Adaptation of the new technologies developed in the EU project MESSIB to Cultural Heritage applications. International Conference "Energy Management in Cultural Heritage", Dubrovnik (Croatia), 06-08 April 2011.

- Becherini F., Bernardi A., Nicola C., Verità M., 2010: Condizioni microclimatiche di vetrate medioevali dotate di controvetrate protettive: effetti su vetro e grisaglia. A.I.Ar. National congress "Riflessioni e trasparenze. Diagnosi e conservazione di opere e manufatti vetrosi", Ravenna (Italy), 24-26 February 2010, Ed. Patron, Bologna (Italy), 1-10.

## ADDITIONAL INFORMATION

### Patents:

- National patent "Rilevatore di condensa e metodo per la rilevazione di condensa su una superficie" (publication no. 0001355070 of 20/02/2009) extended to international patent "Condensate detector and method for detecting condensate on a surface" (publication no. WO 2005/078421 of 25/08/2005)

- National patent no. PD2014A000301 of 11/11/2014 "Metodo per la preparazione di sospensioni di particelle di alcossidi di metalli alcalino-terrosi" (Favaro, Chiurato, Tomasin, Ossola, Bernardi)

## MAIN MONUMENTS STUDIED

### International:

- Sistina Chapel, Rome (Italy) (UNESCO)
- British Museum, London (UK)
- Louvre Museum, Paris (France)(UNESCO)
- Museo dell' l'Orangérie Museum, Paris (France) (UNESCO)
- Sveti Stephan Church, Nassebar, (Bulgaria) (UNESCO)
- Royal Museum of Fine Arts, Antwerp (Belgium) (UNESCO)
- Sainte Chapelle, Paris (France)( UNESCO)
- Cologne Cathedral (Germania)( UNESCO)
- Saint Eustache Church - Paris (France)( UNESCO)
- Hagar Qim and Mnajdra Temples (Malta)(UNESCO)
- Kunsthistorisches Museum, Vienna (Austria)
- Basilique Saint Urbain de Troyes (France) (UNESCO)
- Lascaux caves (France)(UNESCO)
- Santiago de Compostela Chathedral (UNESCO)
- Stavropoleos Monastery, Bucharest (Romania)
- Oviedo Chathedral (Spain)

### National:

- Last Supper , Milano (UNESCO)
- Uffizi Galleries, Florence (UNESCO)
- Palazzo Chiericati, Vicenza (UNESCO)

- Museo Correr, Venezia (Lista UNESCO)
- Biblioteca Marciana, Venezia UNESCO)
- Aureliana Column, Rome (UNESCO)
- Traiana Column, Rome (UNESCO)
- Ducal Palace, Urbino (UNESCO)
- Ara Pacis, Rome (UNESCO)
- Pisa Tower (UNESCO)
- Palazzo Vecchio – Florence (UNESCO)
- Palazzo Diamanti (Ferrara) (UNESCO)
- Santa Croce Church – Florence (UNESCO)
- Chatedral, Orvieto
- S. Maria Foris Portas, Castel Seprio, Varese
- Petrarca Tomb – Arquà Petrarca, Padoue
- Anatomico Theatre, Padoue
- Sala dei Giganti, Palazzo dei Carraresi, Padoue
- S. Giovanni Evangelista Church - Lecce"
- S. Salvatore Church- Copertino, Lecce"
- Museo Civico, Pistoia
- Zandonai Theater – Rovereto (TN)
- Studio del Vasari – Florence
- S. Croce Church – Florence (UNESCO)
- Museo di S. Croce Museum – Florence (UNESCO)
- Museo del Duomo – Florence (UNESCO)
- Longobard Temple, Cividale del Friuli (UD) (UNESCO)
- San Bernardino Basilica – L'Aquila

*Adriana Berni L'*