

Curriculum vitae **Giovanna Navarra**

Personal Details

Name: Giovanna

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Date of Birth: September 26th 1976

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Studies and employment history

01/07/2008 – Today: **Post doctoral fellowship** “Aggregation and amyloid fibrillation processes of proteins”
Department of Physics, University of Palermo, Supervisor Prof. Maurizio Leone.

04/2008: **PhD in Physics** c/o Department of Physics, University of Palermo. Thesis title: “Effects of metal ions on aggregation processes of whey proteins”, SDS Fis/07. Supervision of Prof. Maurizio Leone.

2005-2007: collaboration to the research activity for research project "Role of the metal ions in the aggregation processes of proteins" (PRIN 2005).

11/2006 – 06/2008: **Fellowship** from **Consiglio Nazionale delle Ricerche** (CNR), c/o Biophysics unit of Palermo. Research title: “Olive oil characterization by techniques based on the absorption and emission of the electromagnetic radiation” Caratterizzazione degli olii d’oliva mediante tecniche di assorbimento ed emissione della radiazione elettromagnetica”, for the project “REALIZZAZIONE DI UN CENTRO REGIONALE PER IL CONTROLLO DI QUALITÀ DI OLII VERGINI D’OLIVA” P.O.R. della Regione Siciliana 2000/2006, misura 3.15 azione C, Supervisor Dr PL San Biagio.

02/2005 – 12/2007: Students of PhD course c/o Department of Physics, University of Palermo; cycle XIX; research title: “Study of gelation processes of proteins”.

08/2004 – 10/2006: **Post doctoral fellowship** “Point defects in amorphous silica: study by ESR and optical spectroscopy” c/o Department of Physics, University of Palermo, Supervisor Prof. Roberto Boscaino..

10/2003: Consegue la laurea in Fisica con la votazione di 108/110 presso l’Università degli Studi di Palermo, Facoltà di Scienze, Corso di Laurea in Fisica, con una tesi dal titolo: “Metodologie fisiche applicate ai Beni Culturali: una indagine su materiali vetrosi sodico-calcici.”, Relatore Prof. M. Leone. Master Degree in Physics (108/110) c/o the University of Palermo. Thesis title “Physical methods applied to Cultural assests: a study on soda-lime glasses”, Supervision of Prof. M. Leone.

Teaching Experiences

10/2009-Today: Lecturer for the course “Laboratorio di Biofisica” in the degree course in Physics, Faculty of Sciences University of Palermo.

07/2009-Today: Lecturer for the course “Biofisica e Biostrumentazione” in the degree course in Biotechnology, Faculty of Sciences, University of Palermo.

05-12/2009: Assistant supervisor of Filippo Troia, student of the master degree in Physics (University of Palermo); Thesis title: “Processes of nucleated aggregation of Lysozyme” Supervisor: Prof. Maurizio Leone.

01-07/2009: Assistant supervisor of Francesco Cacciabauda, student of the master degree in Medical Biotechnology and Molecular medicine” (University of Palermo). Supervisor: Prof. V. Militello.

01-11/2010: Assistant supervisor of Francesca Asaro, student of the postgraduate course in Clinic Biochemistry (University of Palermo). Supervisor: Prof. V. Militello.

09/2008-today: training to research activity students of the master degree in Medical Biotechnology and Molecular medicine” (University of Palermo). Supervisor: Prof. V. Militello.

10-12/2008: lecturer for the course in Physics PhD (University of Palermo, cycle XXII) “Difetti di punto e difetti estesi nei materiali amorfi”, person in charge: Prof. R. Boscaino.

International schools:

12/2008: “PRACTICAL INTENSIVE WORKSHOP ON 3D MICROSCOPY: Light and Molecules at Work! CONFOCAL 10”, Genova, 15-18/12/2008.

04/2008: International school of Biophysics “Antonio Borsellino”, Multidimensional optical fluorescence microscopy towards nanoscopy, Erice (Sicily), 19-29/04/2008.

01/2007: XI School of Pure and Applied Biophysics: “Advanced Optical Microscopy Methods in Biophysics”, Venezia 28/01-02/02/2007.

09/2005: Spetsai Summer School on “Protein Misfolding, Protein Modification and Age-Related Diseases”, Spetses (Grecia), 05-15 Settembre 2005.

Scientific Interests

- Solid state Physics, crystalline and amorphous systems, proteins and biological systems.
- Point defects in silica, radiation-matter interaction, infrared absorption properties,.
- Aggregation and fibrillation processes of proteins, conformational changes of secondary and tertiary structures, protein gelation, morphology study

Applied Physical skills

- Absorption (UV-Visible, infrared) and luminescence spectroscopy.
- Cryogenic measurements at liquid helium.
- Light Scattering
- Atomic Force Microscopy
- Confocal fluorescence microscopy
- Two photons Confocal fluorescence microscopy

Computer skills

- Windows and Office applications
- Scientific softwares: (Origin 8, SigmaPlot 11, Opus)

Referee activity for international scientific journals

Journal of Agricultural and Food Chemistry

Journal of Non-Crystalline Solids

Materials Chemistry and Physics

Nuclear Inst. and Methods in Physics Research, B

ISI Publications

G. Buscarino, E. Vella, G. Navarra and R. Boscaino
A two-component model for the 2260 cm⁻¹ infrared absorption band in electron irradiated amorphous SiO₂

J. Non-Cryst Solids (2011) doi:10.1016/j.jnoncrysol.2010.10.042

G. Navarra, M. Cannas, M. D'Amico, D. Giacomazza, V. Militello, L. Vaccaro, M. Leone
Thermal oxidative process in extra-virgin olive oils studied by FTIR, rheology and time-resolved luminescence

Food Chemistry 126 (2011) 1226-1231, ISSN: 0308-8146, doi:10.1016/j.foodchem.2010.12.010.

E. Vella, G. Navarra and R. Boscaino

Temperature dependence of the absorption properties of silanol groups in amorphous SiO₂: Are silanol groups organized in clusters?

Solid State Communications 151 (2011) 306-310, ISSN: 0038-1098, doi:10.1016/j.ssc.2010.11.04.

P. Rondeau, G. Navarra, F. Cacciabauda, M. Leone, E. Bourdon, V. Militello

Thermal aggregation of glycated Bovine Serum Albumin

Biochim. Biophys. Acta – Protein and Proteomics 1804 (2010) 789–798, ISSN: 1570-9639, doi:10.1016/j.bbapap.2009.12.003.

G. Navarra, A. Tinti, M. Leone, V. Militello, A. Torreggiani

Influence of metal ions on thermal aggregation of bovine serum albumin: Aggregation kinetics and structural changes

J. Inorg. Biochem. 103 (2009) 1729-1738, ISSN: 0162-0134, doi:10.1016/j.jinorgbio.2009.09.023.

G. Navarra, E. Vella, S. Grandi, M. Leone, R. Boscaino

Temperature effects on the IR absorption bands of hydroxyl and deuterioxyl groups in amorphous silica glass.

J. Non-Cryst Solids. 355, (2009) 1028-1033, ISSN: 0022-3093, doi:10.1016/j.jnoncrysol.2009.01.041.

G. Navarra, D. Giacomazza, M. Leone, F. Librizzi, V. Militello and P.L. San Biagio

Thermal aggregation and ion-induced cold-gelation of Bovine Serum Albumin.

Eur. Biophys. J. 38, (2009) 437-446, ISSN: 0175-7571, DOI 10.1007/s00249-008-0389-6.

E. Vella, R. Boscaino and G. Navarra,

Vacuum-ultraviolet absorption of amorphous SiO₂: Intrinsic contribution and role of silanol groups.

Physical Review B 77, (2008) 165203_1-165203_6, ISSN: 1098-0121, DOI: 10.1103/PhysRevB.77.165203.

G. Navarra, M. Leone, V. Militello

Thermal aggregation of □-Lactoglobulin in presence of metal ions.

Biophys. Chem. 131 (2007), 52-61, ISSN: 0301-4622, doi:10.1016/j.bpc.2007.09.003.

G. Navarra, R. Boscaino, M. Leone, B. Boizot,

Irradiation effects on the OH-related infrared absorption band in synthetic wet silica,

J. Non-Cryst Solids 353 (2007), 555-558, ISSN: 0022-3093, doi:10.1016/j.jnoncrysol.2006.10.023.

E. Vella, R. Boscaino, G. Navarra, B. Boizot,

Irradiation effects on the absorption edge of silica glass,

J. Non-Cryst Solids 353 (2007), 559-563, ISSN: 0022-3093, doi:10.1016/j.jnoncrysol.2006.11.011.

G. Navarra, I. Iliopoulos, V. Militello, S. G. Rotolo and M. Leone,

OH-related infrared absorption bands in oxide glasses,

J. Non-Cryst. Solids 351 (2005) 1796-1800, ISSN: 0022-3093, doi:10.1016/j.jnoncrysol.2005.04.018.

Reviews

V. Militello G. Navarra, V. Foderà, F. Librizzi, V. Vetri, M. Leone, **Thermal aggregation of proteins in the presence of metal ions.** Review in "Biophysical Inquiry into Protein Aggregation and Amyloid Diseases", (2008), 181-232. Editors P.L. San Biagio e D. Bulone, Transworld Research Network, ISBN: 978-81-7895-354-0.

V. Foderà, F. Librizzi, V. Militello, G. Navarra, V. Vetri, M. Leone, **Nucleation Mechanisms and Morphologies in Insulin Amyloid Fibril Formation,** Review in "Protein Aggregation", (2011). Editor Douglas A. Stein, Series: Protein Science and Engineering Microbiology Research Advances, Nova Science Publishers ISBN: 978-1-61761-815-4.

P. Rondeau, G. Navarra, V. Militello, E. Bourdon, **On the Aggregation of Albumin: Influences of the Protein Glycation**, Review in "Protein Aggregation", (2011). Editor Douglas A. Stein, Series: Protein Science and Engineering Microbiology Research Advances, Nova Science Publishers ISBN: 978-1-61761-815-4.

National and international congress proceedings

P. Rondeau, G. Navarra, F. Cacciabaud, M. Leone, E. Bourdon, V. Militello

Thermal aggregation of glycosylated Bovine Serum Albumins

Abstract of the 7th European Biophysics Congress
Eur Biophys J (2009) 38 (Suppl 1):S1-S12, ISSN: 0175-7571.

Boscaino R., Vella E. and Navarra G.,

Absorption Edge in silica glass.

Proceeding of 4th IEEE/LEOS Workshop on Fibres and Optical Passive Components (2005), 318-322, ISBN: 0-7803-8949-2, DOI:10.1109/WFOPC.2005.1462147.

Contributions to International congress and schools

Posters

A. Tinti, G. Navarra, M. Leone, V. Militello, A. Torreggiani

Influence of metal ions on thermal aggregation processes of globular proteins

EUCMOS 2010 - XXX European Congress of Molecular Spectroscopy, Firenze 29/08-03/09/2010

G. Navarra, A. Tinti, M. Leone, V. Militello, A. Torreggiani

Influence of metal ions on thermal aggregation of bovine serum albumin: Aggregation kinetics and structural changes

European Conference on the Spectroscopy of Biological Molecules, Palermo 28/08-02/09/2009.

G. Navarra, D. Giacomazza, M. Leone, V. Militello, P.L. San Biagio

Pre-aggregates characterization and viscoelastic studies of BSA cold gels induced by metal ions

XIX Congresso Nazionale della Società Italiana di Biofisica Pura ed Applicata (SIBPA), Roma 17-20/09/2008.

G. Navarra, E. Vella, M. Leone, R. Boscaino

Thermal evolution of the OH-related infrared absorption lineshape in synthetic wet silica, 7th Symposium SiO₂ Advanced Dielectrics and Related Devices

, Saint Etienne (France), 30/06-02/07/2008.

M. Amenta, M. Ricca, M. Cannas, M. D'Amico, G. Navarra, L. Vaccaro, D. Giacomazza, and P.L. San Biagio,
Oxidative changes in Sicilia extra virgin olive oil under heating treatment detected by FTIR spectroscopy, viscosimetry and time-resolved luminescence, 3th International Symposium on Recent Advances in Food Analysis, Praga, 07-09/11/2007.

G. Navarra, F. Librizzi, V. Militello, M. Leone

Metallic Ions Effects on the Heat-aggregation Process of β -Lactoglobulin, XIIth European Conference on the Spectroscopy of Biological Molecules, Bobigny (Paris), 01-06/09/2007.

G. Navarra, S. Raccosta, M. Manno, V. Militello, M. Leone

Lysozyme Aggregation Driven by Unfolding: the Role of Metal Ions, XIIth European Conference on the Spectroscopy of Biological Molecules, Bobigny (Paris), 01-06/09/2007.

G. Navarra, F. Librizzi, M. Leone,

Protein aggregation induced by metallic ions: a FTIR study,

XVIII Congresso Nazionale della Società Italiana di Biofisica Pura e Applicata, Terrasini (Palermo), 17 - 21 Settembre 2006.

G. Navarra, R. Boscaino, M. Leone, B. Boizot,

Irradiation effects on the OH-related infrared absorption band in synthetic wet silica,

6th Symposium SiO₂, Advanced Dielectrics e Related Devices, Mondello, (Palermo), 25-28 Giugno 2006.

E. Vella, R. Boscaino, G. Navarra, B. Boizot,

Irradiation effects on the absorption edge of silica glass,

6th Symposium SiO₂, Advanced Dielectrics e Related Devices, Mondello, (Palermo), 25-28 Giugno 2006.

G. Navarra, F. Librizzi, V. Militello, V. Vetri and M. Leone,

Aggregation processes in β -lactoglobulin studied by FTIR and fluorescence spectroscopy,

Spetsai Summer School on “Protein Misfolding, Protein Modification and Age-Related Diseases”, Spetses (Grecia), 5-15 Settembre 2005.

V. Vetri, F. Librizzi, V. Militello, G. Navarra and M. Leone,
pH effect on the thermal aggregation of Concanavalin A,
Spetsai Summer School on “Protein Misfolding, Protein Modification and Age-Related Diseases”, Spetses (Grecia), 5-15 Settembre 2005.

G. Navarra, M. Leone and R. Boscaino,
Infrared activity of hydroxyl groups embedded in silica glasses,
MMD Meeting, Genova, 22-24 Giugno 2005.

R. Boscaino, E. Vella and G. Navarra,
Absorption edge in silica glass,
Congresso WFOPC 2005, 4th IEEE/LEOS Workshop on Fibres and Optical Passive Components, Mondello (Palermo), 22-24 Giugno 2005.

G. Navarra, I. Iliopoulos, V. Militello, S. Rotolo and M. Leone,
OH-related Infrared Absorption Bands in Oxide Glasses,
5th Symposium SiO₂, Advanced Dielectrics e Related Devices, Chamonix Mont-Blanc, France, 21-23 Giugno 2004.

Oral contributions

P. Rondeau, G. Navarra, F. Cacciabauda, M. Leone, E. Bourdon, V. Militello
Thermal aggregation of glycated Bovine Serum Albumins
“7th EBSA European Biophysics Congress”, Genova, 11-15/07/2009.

Agnello S., Alessi A., Boscaino R., Buscarino G., Cannas M., D'Amico M., Gelardi F.M., Leone M., Messina F., Navarra G., Nuccio L., Vaccaro L., Vella,
Inhomogeneity Effects On Point Defects Studied By Photoluminescence Time Decay In SiO₂, International Roundtable on Advanced Wide Band Gap Materials for Radiation Detectors, Sinaia (Romania), 20/06/2007.

Militello V., Navarra G., Librizzi F., Leone M.,
Role of copper and zinc ions on the heat-induced aggregation.
FTIR 2007. International Workshop on Infrared Spectroscopy Applied to Biological and Biomimetic Systems: From the Isolated Molecule to the Cell Buenos Aires (Argentina), 07/11/2007.

Collaborations with other research groups:

1. Emmanuel Bourdon, *Laboratoire de Biochimie et Genetique Moleculaire (LBGM), Université de La Réunion, Saint Denis de La Réunion, France*
2. Daniela Giacomazza, *Consiglio Nazionale delle Ricerche, Istituto di Biofisica, U.O. di Palermo*
3. Armida Torreggiani, *Consiglio Nazionale delle Ricerche, Istituto I.S.O.F., Bologna*
4. Giulia Napoli, *Direttore Tecnico Capo Chimico della Polizia di Stato, Gabinetto Regionale Polizia Scientifica di Palermo*