CURRICULUM VITAE

MAURIZIO MATTARELLI

Personal data	Born in Perugia, 26th November 1973 Married, two children
Citizenship	Italian
Address	Via della Resistenza 74, 38123 Oltrecastello – Trento (ITALY)
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EDUCATION

PhD	***Phd in Physiscs*** **(**4th November 2004) at the University of Trento in the group of Prof. M. Montagna(Physics Department) and Dr M.Ferrari (CNR-IFN). Thesis title: "*Tellurite glasses and oxy-fluoride glass ceramics activated by Er^{3+} and Tm^{3+} for photonic applications*".
Master Course	**Master Course "Materials for Information Technology and Energy Management"** at Istituto Universitario di Studi Superiori, (Pavia), with a scholarship. Courses (February-May 2001) about deposition and characterization techniques of materials for photonics and microelectronics. Stage at Pirelli Cavi e Sistemi S.p.A
Master's degree	**M.Sc. in Physics** (20th May 1999) at the University of Perugia with marks **110/110 cum laude.** Thesis title:"Study of dynamics of polybutadiene by inelastic scattering of light and X-ray". (Proff. L. Verdini e D. Fioretto).

PROFESSIONAL EXPERIENCE

June 2013-present	Assistant professor (temporary position) at **Physics Department of Perugia University**.
December 2011-Current	Research associate at the **Physics Department of the University of Trento** in the group of Prof. Maurizio Montagna. Main subject "*Vibrational properties of colloidal superstructures*"
June 2008-December 2011	Post doc researcher at the **Physics Department of Trento University** Main subject :"Study of the deterioration of materials for contemporary art by spectroscopic imaging"
Nov. 2004-June 2008	Research associate at the **Physics Department of the University of Trento** in the group of Prof. Maurizio Montagna. Main subject *"Spectroscopy of nanocomposite materials"*
June-December 2001	Stage at R&D department of **Pirelli Cavi e Sistemi S.p.A**. in Milano during the Master Course "Materials for Information Technology and Energy Management". Master Thesis Title: *"Spectroscopic characterization of modified oxide glasses"*
December 1999-Novmber 2000	Lieutenant of the Army Corps of Engineers at the"***Ufficio Tecnico Territoriale" in Torino*** Functions: personnel management, financial planning, acceptance tests.
July-September 1999	Research assistant at **Physics Department of Perugia University** Subject: "Development of an electrooptic device operating in the range 1*MHz-1GHz" (Prof. D. Fioretto)*

TEACHING

University of Trento	*Assistant in several physics courses at the University of Trento*: *General Physics* (Degree course in Informatics, 2002-2003, 2003-2004) *Physics Laboratory* (Degree course in Physics, 2006-2007, 2007-2008, 2008-2009) *Chemistry-physics* (Degree course in Cultural heritage science, 2008-2009) *Photonics for sensing* (Master MEMS, 2008-2009) *Physics applied to Cultural heritage* (Degree course in Cultural heritage science, 2009-2010, 2010-2011, 2011-2012, 2012-2013). *Physical methods for archaeological research* (Degree course in Conservation and management of cultural heritage, 2009-2010).
University of Trento	Co-supervisor of several (6 B.Sc. and 5 M.Sc.) degree thesis in Physics and in Cultural Heritage Science.

RESEARCH ACTIVITY

RESEARCH INTEREST

My research interests are quite broad and not confined in a single direction. While I have a background in condensed matter physics I have always been attracted by the possibility to apply my knowledge also to material science (especially since attending the master course in materials for information technology). Moreover, in the last years, I have also exploited my competence in spectroscopy to study cultural heritage materials.

My main interests concern:

- *Properties, structure and processing of glasses (bulk and film) for optical applications and photonics.*
- *Nanostructured material activated by rare earth ions (spectroscopic and optical properties).*
- *Vibrational properties of nanoparticles and colloidal aggregatess*

Finally, I note that starting from my degree thesis I have always enjoyed dividing my activity between performing experiments in lab, not disregarding the assembly of set-ups, and more theoretical work.

University of Perugia
Degree Thesis
Sept.1998-Sept.1999

I studied the process of glass transition in polybutadiene by investigating the velocity and attenuation of acoustic waves as a function of temperature. The measurements were carried on by Brillouin spectroscopy (6-pass tandem interferometer) and X-ray (at ESRF). During the thesis I also fabricated an electrooptic device based on LiNbO3 for accurately calibrating the frequency scale of Brillouin spectrometer

Milano
Stage at Pirelli S.p.A.
July –Dec. 2001

During the stage, in R&D department, I worked on the synthesis and spectroscopic characterization of glasses SiO_2-NaO_2-Al_2O_3. I had also the opportunity to work in the laboratory of Prof. Bottani at Politecnico to measure by Brillouin spectroscopy the elasto-optic coefficient of the investigated glasses.

University of Trento
PhD
2002-2004

The research carried out during the PhD, inside numerous national and international collaborations, mostly regarded tellurite glasses and oxy-fluoride glass-ceramics activated with thulium and erbium ions. These materials were studied in order to develop optical amplifiers in the wide low-loss region of silica fibers (1300-1700 nm). The main results resides in i) evidencing the excellent potentialities of zinc oxychloride glasses as a host for erbium, ii) showing the effects of self-absorption in evaluating them spectroscopic properties and devising an effective method to get rid of them iii) developing a procedure to determine the fraction of active ions embedded in glass and in nanonocrystals iv) fabricating by pulsed laser deposition and characterizing Er3+-activated tellurite and oxyfluoride waveguides.

University of Trento
Research associate
Nov.2004-June 2008

The practical importance of nanocomposite materials, where a glass phase incorporates nanoscale clusters of different composition pushed me to focus on these topics, studying both their application as matrices for optically active ions, and their basic properties. In particular, I focused on mixed silicate glasses, where the heat treatments can induce

aggregation of more mobile ions resulting in phase separation. During the study, I analyzed the formation of clusters and nanoparticles, both metallic and insulating, both crystalline and glassy, and their interaction with the active rare earth ions. One aspect that I particularly emphasized is the study of transparency in these materials. We found that it is due to the arrangements of particles and to the spatial order that is established on different length scales.

University of Trento
Post doc researcher
June 2008- Dec. 2011

In these last years, I gained an interest in the study of cultural heritage, where I could apply my expertise in the light spectroscopy techniques (Raman, FTIR, reflectance and photoluminescence) in order to measure in a non destructive and non contacting way samples of high artistic or historical value. I started various collaborations with museums aimed to the characterization of archaeological finds and modern and contemporary paintings. The purpose of the analysis concerns both the identification of materials used as pigments or binders and the study of their microstructural properties, for evidencing particular manufacturing techniques. Following the approval of the grant for the project "MATIS" by the Autonomous Province of Trento, I applied my competence in material science to study the aging effects on artistic polymeric materials. I also developed an apparatus for imaging spectroscopy with the aim of rapidly and non-invasively determining the state of conservation of art objects.

University of Trento
Research associate
Dec. 2011- current

The main goal of the research project I am currently involved, is in the study of the structural and dynamical properties of disordered and nanocomposite systems in the mesoscopical length scale (from about 100nm up to 10 micron), constituted by polymeric colloidal solutions and aggregates. These materials are of strategic importance for the presence of phonon and photon band gaps which can be exploited in technological applications for a combined control of propagation of light and acoustic waves. Moreover, they also constitute a good testing bench for assessing the potentialities of experimental techniques and data analysis, which can be valuable for the study of complex biological materials.
In particular I worked on the development of the theory needed for the analysis of the eigenmode spectra of aggregates of spherical or anisotropic particles acquired by inelastic light scattering. The particle vibration spectroscopy does not only reveal the nanomechanical properties of individual colloidal particles,but also provides a simultaneous access to the interactions between neighboring particles forming the colloidal cluster.

Scientific skills

Synthesis of glasses and waveguides by sol-gel route and rf sputtering.

Characterization techniques:
• Optical spectroscopy (Raman, Brillouin, visible and IR absorption, time-resolved luminescence, lifetime measurement, FORS, spectroscopic imaging).
• Optical (m-line, measurements of loss in waveguides)
• X-ray (diffraction, diffusion, and small-angle and inelastic scattering at ESRF Grenoble)
• Optical and electron microscopy.

Modelling of the mechanism of excitation in active doped materials and of the vibrational dynamics of nanostructured materials.

Key scientist in research project:

MIUR PRIN 2002	Nanostructured Materials for Integrated Optics as a **PhD Student**.
FP6 - INTAS 2003	Mechanism of optical losses in low phonon energy glasses for infrared fibres as a **Young Scientist**.
MIUR -PRIN 2004	Nanocomposite glasses for Photonics as a **Research Associate**.
PAT- Post Doc 2006	Study of Deterioration of Materials for Contemporary Art by Spectroscopic Imaging as the **Principal Investigator** (138 k€ Grant).

Scientific reviewer

Reviewer for the following journals of applied and basic physics: *Journal of Alloys and Compounds, Journal of Luminescence, Journal of Non-Crystalline Solids; Journal of Optics A: Pure and Applied Optics, Journal of Physics and Chemistry of Solids ,Journal of Physics D: Applied Physics; Journal of Physics: Condensed Matter, European Physical Journal: Applied Physics, Material Research Bulletin; Optical Materials, Nanotechnology, Physical Review B, Physica B: Condensed Matter, Physica Status Solidi,*

Publications

The obtained results were published on more than 80 papers on peer-reviewed international journals and conference proceedings. A comprehensive evaluation may be obtained by the h-index, which is 15 and by the total number of citations, which is higher than 650.

Scientific qualifications

2011 Qualification at CNR competition for Physical Science Researcher (FI32/3).
2014 National Scientific Qualification to function as Associate Professor in Italian Universities in sector 02/B1 – Experimental Physics of Matter

CONFERENCES AS PRESENTING AUTHOR

INTERNATIONAL

1 *"Tm3+-activated transparent oxy-fluoride glass ceramics: structural and spectroscopic properties"*.
Talk at *"X conference of non-crystalline solids"*, July 2003, Parma.

2 *"Optical spectroscopy of Er^{3+} and Ce^{3+} -codoped TeO_2-WO_3-Na_2O glasses"*
Talk at *Photonics Europe,* April 2004 Strasbourg, France.

3 "*Silver to erbium energy transfer in phosphate glasses*".
Talk at *VI Symposium SiO_2 and Advanced Dielectrics*, July 2006, Mondello (PA).

4 "*Effect of Eu^{3+} and Ce^{3+} codoping on the relaxation of Er^{3+} in silica-hafnia and tellurite glasses*",
Talk at *"EURODIM 2006",* July 2006, Milano.

5 "*Ultratransparent glass ceramics: The structure factor and the quenching of the Rayleigh scattering*"
Talk at *PRE 07",* May 2007, Trento.

6 "*Optical scattering in glass ceramics*"
Talk at 11th Intern. workshop on complex systems*,* March 2008, Andalo (Trento).

7 *Emilio Vedova's paintings: materials and conservation issues.*
Talk at *EUCMOS 2010*, August-September 2010, Firenze.

8 "*Vibrational dynamics and Brillouin scattering in crystals of weakly interacting soft spheres*".
Talk at 13th Intern. workshop on complex systems, march 2012, Andalo (Trento).

NATIONAL

1 "*Vetri telluriti drogati con erbio con alta efficienza quantica*".
Talk at *"Fotonica 2003"*, April 2003, Riva del Garda.

2 "*Vetroceramiche attivate Er^{3+} e Tm^{3+} per applicazioni WDM*".
Talk at *"Fotonica 2005"*, June 2005, Trani.

3 *"Caratterizzazione di pigmenti preistorici con metodi spettroscopici e diffrattometrici"*
Talk at *AIAr 2008*, February 2008, Siracusa.

4 *Deterioration of contemporary paints: the case of Emilio Vedova.*
Talk at *AIAr 2010*, February 2010, Pavia.

5 *Materiali e problematiche di conservazione delle opere contemporanee: il caso di Emilio Vedova.*
Talk at *Congresso SIF 2010*, September 2010, Bologna.

6 *De Pisis a Cortina: uno studio storico e conservativo su opere della Collezioni Rimoldi*
Talk at *AIAr 2011*, February 2011, Ferrara.

PUBLICATIONS ON INTERNATIONAL JOURNALS

1 S. Caponi, M. Dionigi, D. Fioretto, M. Mattarelli, L. Palmieri, G. Socino, "*Electrooptic modulator for high resolution Brillouin scattering measurements*", Review of Scientific Instruments vol.**72** n. 1 (2001).

2 D.Fioretto, C. Masciovecchio, M. Mattarelli, G. Monaco, L. Palmieri, G. Ruocco, F. Sette, "*Brillouin light and X- ray study of glass forming polybutadiene*", Philosophical Magazine B, vol.**82** n.3 (2002).

3 D.Fioretto, M. Mattarelli, C. Masciovecchio, G. Monaco, G. Ruocco, F. Sette, "*Cusp-like temperature behavior of the non-ergodicity factor of polybutadiene revealed by a joint light and X-ray Brillouin scattering investigation*", Physical Review B **65** (22), 224205 (2002).

4 M.Martino, A.P.Caricato, M.Fernandez, G.Leggieri, A.Jha, M.Ferrari, M.Mattarelli "*Pulsed laser deposition of active waveguides",* Thin Solid Films, 433 (2003) 39 –44.

5 A.P.Caricato, M. Fernández, G. Leggieri, M. Martino, V.Resta, M.Ferrari, L. Zampedri, M. Mattarelli, M. Montagna, Luís Fortes, Rui M. Almeida. *"Er3+-doped tellurite waveguides deposited by excimer laser ablation"* Materials Science and Engineering B 105 (2003) 65-69.

6 R.M. Almeida, A.C. Marques, S. Pelli, G.C. Righini, A. Chiasera, M.Mattarelli, M. Montagna, C. Tosello, R.R. Gonçalves, H. Portales, S. Chaussedent, M. Ferrari, and L. Zampedri *"Spectroscopic assessment of titania and hafnia silica-based planar waveguides"* Philosophical Magazine 84 (2004) 1659-1666.

7 M. Mattarelli, M. Montagna, E. Moser, A. Chiasera, V. Tikhomirov, A. B. Seddon, S. Chaussedent, G. Nunzi Conti, S. Pelli, G.C. Righini, L. Zampedri, M. Ferrari *"Tm3+-activated transparent oxy-fluoride glass ceramics: structural and spectroscopic properties"* Journal of Non-Crystalline Solids 345&346, 354 –358 (2004).

8 L. Zampedri, G. C. Righini, H. Portales, S. Pelli, G. Nunzi Conti, M. Montagna, M. Mattarelli, R.R. Gonçalves, M. Ferrari, A. Chiasera, C. Armellini *"Sol-Gel-Derived Er-activated SiO2-HfO2 Planar Waveguides for 1.5 μm application"* Journal of Non-Crystalline Solids 345&346 (2004) 580 –584.

9 C. Armellini, A. Chiasera, S. Dirè, M. Ferrari, A. Martucci, M.Mattarelli, M. Montagna, E. Moser, S. Pelli, G.C. Righini, G. D. Soraru, L. Zampedri, "*Photoluminescence excitation spectroscopy of Er 3+ /Yb 3+ co activated silica-alumina monolithic xerogels*", Journal of Sol-Gel Science and Technology 32 (2004), pp. 267-271.

10 S. Caponi , A. Fontana, M.Mattarelli , M. Montagna , F. Terki, T. Woignier, *"Influence of thermal treatment in high and low frequency dynamic of silica porous systems"* Journal of Non-Crystalline Solids 345&346 (2004) 61 - 65.

11 R. Martínez Vázquez, R. Osellame, M. Marangoni, R. Ramponi, E. Diéguez, M.Ferrari, M.Mattarelli *"Optical Properties of Dy^{3+} -doped Yttrium Aluminum Borate"* Journal of Physics: Condensed Matter 16 (2004) 465 - 471.

12 M. Mattarelli, A. Chiappini, M. Montagna, A. Martucci, A. Ribaudo, M. Guglielmi, M. Ferrari, A. Chiasera "*Optical Spectroscopy of TeO2-GeO2 glasses activated with Er 3+ and Tm 3+ ions*". Journal of Non-Crystalline Solids 351 (2005), pp. 1759-1763.

13 M. Mattarelli, M. Montagna, F. Rossi, V. Tikhomirov , A. B. Seddon: *"Tm^{3+} -activated transparent oxy-fluoride glass ceramics: a study by Raman scattering of the nanocrystal size distributio*n". Physics and chemistry of glasses. 31 (2005), pp. 519–524.

14 C. Tosello, M. Montagna, M. Mattarelli, M. Ferrari, S. Chaussedent, A. Monteil, V. Tikhomirov , A. B. Seddon *"Er^{3+} and Tm^{3+} -containing ultra-transparent oxy-fluoride based glass ceramics for Wavelength Division Multiplexing optical amplifier*s". Physics and chemistry of glasses 31 (2005), pp. 377–381.

15 M. Martino, A.P. Caricato, A. Fazzi, F. Romano, V.K. Tikhomirov, A.B. Seddon, M.Mattarelli, A. Chiappini, K. C. Vishnubhatla: "*Pulsed Laser Deposition of Er 3+ -doped Oxyfluoride Thin Films*" Journal of Non-Crystalline Solids 351 (2005), pp. 1810-1813.

16 L. Zampedri, C. Tosello, H. Portales, M. Montagna, M. Mattarelli, A. Chiappini, G. C. Righini, S. Pelli, G. Nunzi Conti, M. Martino, S. Portal, A. C. Marques, R.M. Almeida, Y. Jestin, M. Ferrari, A. Chiasera: "*Spectroscopic assessment of rare-earth activated planarwaveguides and microcavities.*" Applied Surface Science 248 (2005) 3-7.

17 H. Portales, M. Mattarelli, M. Montagna, A. Chiasera, M. Ferrari, A. Martucci, P. Mazzoldi, S. Pelli, G. C. Righini: "*Investigation of the role of silver on spectroscopic features of Er 3+ -activated Ag-exchanged silicate and phosphate glasses*" Journal of Non-Crystalline Solids 351 (2005), pp. 1738-1742.

18 A. Chiasera, M. Ferrari, M. Mattarelli, M. Montagna, S. Pelli, H. Portales, J. Zheng, and G.C. Righini: *"Assessment of spectroscopic properties of erbium ions in a soda-lime silicate glass after silver-sodium exchange"* Optical Materials 27 (2005), pp. 1743- 1747.

19 M. Mattarelli, M. Montagna, A. Chiasera, M. Ferrari, L.Zampedri, G.C. Righini, L.M. Fortes, R.M. Almeida, M.C. Gonçalves, L.F. Santos *"Self-absorption and radiation trapping in Er^{3+} -doped TeO_2-based glasses",* Europhysics Letters 71 (2005), pp. 394–399.

20 G. Speranza, S. N. B. Bhaktha, A. Chiappini, A. Chiasera, M.Ferrari, C. Goyes, Y. Jestin, M. Mattarelli, L. Minati, M. Montagna, G. Nunzi Conti, S. Pelli, G. C. Righini, C. Tosello, K. C. Vishunubhatla, "*Nanocomposite Er–Ag silicate glasses*" Journal of Optics A: Pure and Applied Optics 8 (2006) s450-s454.

21 M. Mattarelli, S. Sebastiani, J. Spirkova, S. Berneschi, M. Brenci, R. Calzolai, A. Chiasera, M. Ferrari, M. Montagna, G. Nunzi Conti, S. Pelli, G.C. Righini, "*Characterization of erbium doped lithium niobate crystals and waveguides*" Optical Materials 28 (2006) 1292–1295.

22 S.N.B. Bhaktha, B. Boulard, S. Chaussedent, A. Chiappini, A. Chiasera, E. Duval, C. Duverger, S. Etienne, M. Ferrari, Y. Jestin, M. Mattarelli, M. Montagna, A. Monteil, E. Moser, H. Portales, K.C. Vishunubhatla, "*Erbium-activated modified silica glasses with high 4I13/2 luminescence quantum yield*" *Optical Materials* 28 (2006) 1325–1328.

23 M. Mattarelli, M. Montagna, F. Rossi, A. Chiasera, M. Ferrari ,"*Mechanism of low-frequency Raman scattering from the acoustic vibrations of dielectric nanoparticles*", Physical Review B 74 (2006) pp. 153412/1 - 153412/4.

24 Luis M. Fortes, Luis F. Santos, M. Clara Gonçalves, Rui M. Almeida, M. Mattarelli, M. Montagna, A. Chiasera, M. Ferrari, A. Monteil, S. Chaussedent, G.C. Righini, "*Er3+ ion dispersion in tellurium oxychloride glasses*" Optical Materials 29 (2007) 503-509.

25 M. Mattarelli, , M. Montagna , L.Zampedri , M. Bouazaoui, B. Capoen , S. Turrell,M. Ferrari, G.C. Righini "*Effect of Eu^{3+} and Ce^{3+} codoping on the relaxation of Er^{3+} in silica-hafnia and tellurite glasses*", Physica Status Solidi (c) 4, 793-796 (2007).

26 L. Zampedri, M.Mattarelli, M.Montagna R. R. Gonçalves "*Evaluation of Local Field Effect on the $^4I_{13/2}$ lifetimes in Er-doped Silica-Hafnia Planar waveguides*" Physical Review B 75, 073105 (2007).

27 M. Mattarelli , M.Montagna , E. Moser , K.C. Vishnubhatla , C. Armellini , A.Chiasera , M.Ferrari , G.Speranza , M. Brenci , G. Nunzi Conti , G.C. Righini,"*Silver to erbium energy transfer in phosphate glasses*", J. Non-Cryst. Sol. 353 (5-7) 498-501 (2007).

28 M. Mattarelli, M. Montagna, K. Vishnubhatla, A. Chiasera, M. Ferrari, and G.C. Righini "*Mechanisms of Ag to Er energy transfer in silicate glasses: A photoluminescence study*" Physical Review B 75,125102 (2007)

29 M. Ivanda, K. Furić, S. Musić , M. Ristić, M. Gotić, D. Ristić, A.M. Tonejc, I. Djerdj, M. Mattarelli, M. Montagna, F. Rossi, M. Ferrari, A. Chiasera, Y. Jestin, G. C. Righini, W. Kiefer, R.R. Gonçalves "*Low Wavenumber Raman Scattering of Nanoparticles and Nanocomposite Materials*", Journal of Raman Spectroscopy 38 (2007) pp 647-659.

30 S. Caponi, A. Fontana, M. Mattarelli, M. Montagna, F. Rossi, "*Influence of fictive temperature and OH content in dynamical properties of vitreous silica: comparison between Raman, Brillouin, and Neutron scattering spectra*" J. of Physics: Condensed Matter 19, 205149 (2007).

31 A. Chiappini, C. Armellini, A. Chiasera, M. Ferrari, Y. Jestin, M. Mattarelli, M. Montagna, E. Moser, G. Nunzi Conti, S. Pelli, G.C. Righini, M.C. Gonçalves, R.M. Almeida, "*Design of photonic structures by sol–gel-derived silica nanospheres*", J. Non-Cryst. Sol. 353 (5-7) 674-678 (2007).

32 M. Bouazaoui, B. Capoen, A. P. Caricato, A. Chiasera, A. Fazzi, M. Ferrari, G. Leggieri, M. Martino, M. Mattarelli, M. Montagna, F. Romano, T. Tunno, S. Turrel and K. Vishnubhatla "*Pulsed Laser Deposition of Er doped tellurite films on large area*",Journal of Physics: Conference Series 59 475–478 (2007).

33 A. Chiappini, C. Armellini, A. Chiasera, M. Ferrari, Y. Jestin, E. Moser, M. Montagna, M. Mattarelli, C. Tosello, L.Zampedri,G. Nunzi Conti, S. Pelli, R.M. Almeida and G.C. Righini, *"Er^{3+}-activated silica inverse opals synthesized by the sol-gel method",* Optoelectronics Letters 3, (3) pp. 184-187 (2007).

34 M. Mattarelli, S. Caponi A. Chiappini, E. Moser, M. Montagna, F. Rossi, C. Tosello, C. Armellini, A. Chiasera, M. Ferrari, Y. Jestin,G. Nunzi Conti, S. Pelli, and G.C. Righini, *"Diagnostic techniques for photonic materials based on Raman and Brillouin spectroscopies*", Optoelectronics Letters 3, (3) pp. 188-191 (2007).

35 M. Mattarelli, M. Montagna, P. Verrocchio, "*Ultratransparent glass ceramics: The structure factor and the quenching of the Rayleigh scattering*" Applied Physics Letters 91 (2007) pp. 061911-1 – 061911-3

36 M. Mattarelli, M. Montagna, F. Rossi, C. Tosello, N. D. Afify, M. Bettinelli, A. Speghini, C. Armellini, Y. Jestin, F. Rocca, S. Gialanella *"Raman and Er^{3+} spectroscopy of hafnia single crystals and nanocrystals",* Optical Materials, 31 (9), 1362-1365 2009.

37 M. Mattarelli, M. Montagna, P. Verrocchio*, "Optical scattering in glass-ceramics",* Philosophical Magazine 88 (33-35), pages 4125 - 4130 (2008).

38 L. Orsingher; M. Calicchio;G. Carini Jr; R. Dal Maschio;D. Fioretto; A. Fontana; P. Fumagalli ; E. Gilioli; M. Mattarelli; E. Moser; F. Rossi *Optical and spectroscopic characterization of permanently densified GeO2 glasses ,* Philosophical Magazine 88 (33-35), pages 3907 - 3914 (2008).

39 K C Vishnubhatla, S Venugopal Rao, R Sai Santosh Kumar, R Osellame, S N B Bhaktha, S Turrell, A Chiappini, A Chiasera, M Ferrari, M Mattarelli, M Montagna, R Ramponi, G C Righini and D Narayana Rao *"Femtosecond laser direct writing of gratings and waveguides in high quantum efficiency erbium-doped Baccarat glass"* Journal of Physics D: Applied Physics 42 (2009) 205106.

40 S. Gialanella, F. Girardi, G. Ischia, I. Lonardelli, M. Mattarelli, M. Montagna "*On the goethite to haematite phase transformation",* J. of Thermal Analysis and Calorimetry, 102 (2010) pp 867–873.

41 T. Still, M. Mattarelli, D. Kiefer, G. Fytas, and M. Montagna. "*Eigenvibrations of Submicrometer Colloidal Spheres" ,* The Journal of Physical Chemistry Letters 1, pages 2440–2444 (2010)

42 M.Mattarelli, G.Gasperi, M.Montagna and P.Verrocchio, *"Transparency and long ranged fluctuations: the case of glass-ceramics."*, Physical Review B 82(2010), art n. 094204.

43 S. Gialanella, R. Belli, G. Dalmeri, I. Lonardelli, M. Mattarelli, M. Montagna, L. Toniutti, *"Artificial or natural origin of hematite based red pigments In archaeological contexts: the case of Riparo Dalmeri (Trento Italy)",* Archeometry, 53 (2011) pp 950-962.

44 M.Mattarelli and M.Montagna *"Comment on 'Selection rules for Brillouin light scattering from eigenvibrations of a sphere' [Chem.Phys. Lett. 461 (2008) 111]"*
Chemical Physics Letters 524 (2012) pp 112-115

45 M. Mattarelli, M. Montagna, T. Still, D. Schneider, G. Fytas, *Vibration spectroscopy of weakly interacting mesoscopic colloids*, Soft Matter 8 (2012) pp. 4235-4243

46 R. K. Ramamoorthy, A. K. Bhatnagar, F. Rocca, M. Mattarelli, M. Montagna "*Structural and optical characterization of the local environment of Er 3+ ions in PbOZnO tellurite glasses"*. Journal of Physics. Condensed Matter, vol. 24, 505101 (2012)

47 Cazzolli, G. , Caponi, S., Defant, A., Gambi, C.M.C., Marchetti, S., Mattarelli, M., Montagna, M., Rossi, B., Rossi, F., Viliani, G. *Aggregation processes in micellar solutions: A Raman study,* Journal of Raman Spectroscopy 43, p. 1877-1883 (2012).

48 R. K. Ramamoorthy, A.K. Bhatnagar, F. Rocca, G. Dalba, M. Mattarelli and M. Montagna *"Er3+ local structure and its optical properties in ZnO-PbO tellurite glasses."*
Journal of Non-Crystalline Solids 383, p 153-156 (2014).

49 S. Caponi, L. Liguori, A. Giugliarelli,M. Mattarelli, A. Morresi, S. Sassi, L. Urbanelli, C. Musio. *"Raman micro-spectroscopy: A powerful tool for the monitoring of dynamic supramolecular changes in living cells"* Biophysical Chemistry 182, p 58-63 (2013).

50 D. Schneider, P. Beltramo, M. Mattarelli, P. Pfleiderer, J. Vermant, D. Crespy, M. Montagna, E. Furst, G. Fytas *"Elongated polystyrene spheres as resonant building blocks in anisotropic colloidal crystals"* Soft Matter 9, p 9129-9136 (2013)

51 S. Caponi, M. Mattarelli, C.M.C. Gambi, F. Rossi, M. Montagna *"The Action of Ligands in the Aggregation Process of Soft Colloidal Solution Monitored by Raman Spectroscopy"* ,Food Biophysics 8 p 203-208 (2013)

52 M. Mattarelli, M. Secchi, M. Montagna, *"Phononic crystals of spherical particles: A tight binding approach"* Journal of Chemical Physics 139, 174710 (2013)

PROCEEDINGS

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Quanto sopra indicato si interpreti come dichiarazione sostitutiva ai sensi degli articoli 19, 46 e 47 del DPR 28 dicembre 2000 numero 445; dichiaro a tal proposito di essere consapevole delle responsabilità e delle sanzioni penali previste dall.articolo 76 del medesimo decreto per false attestazioni e dichiarazioni mendaci.

Perugia 05/02/2014 Maurizio Mattarelli