CURRICULUM VITAE

FORMATO EUROPEO/EUROPEAN FORMAT

INFORMAZIONI PERSONALI/ PERSONAL INFORMATION

Nome, Cognome/Name, Surname	Stefano Veronesi
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Sito web/Website	
Nazionalità/Nationality	**italiana**
Luogo e data di nascita/ Place and Date of birth	**Piombino (LI) 26/04/1961**

ESPERIENZA PROFESSIONALE /WORK EXPERIENCE

Se dipendente CNR indicare:	**N. MATRICOLA 27435** **QUALIFICA RICERCATORE** **LIVELLO III**
In ordine di data /Dates (from – to)	01/04/2008 Researcher at NEST - Istituto Nanoscienze – CNR - Pisa
[Iniziare con le più recenti ed elencare separatamente ciascun incarico ricoperto/ Add separate entries for each relevant post occupied, starting with the most recent.]	01/03/2001 – 28/02/2006 Researcher at National Institute for the Physics of Matter (INFM) U.O. Siena 1994 - 2001 Fellowship at Physics Department University of Siena 1988 – 1992 Fellowship at Istituto di Fisica Atomica e Molecolare – CNR – Pisa
Nome e indirizzo del datore di lavoro / Name and address of employer	Consiglio Nazionale delle Ricerche, Piazzale Aldo Moro, 7 - 00185 Roma Presso: *ISTITUTO DI NANOSCIENZE - SCUOLA NORMALE SUPERIORE, COMPLESSO S. SILVESTRO - P.ZZA S. SILVESTRO 12, 56127 PISA*
Tipo o settore di attività / Type of business or sector	Material science and laser: growth of fluoride and oxide single crystals for Laser application and Hydrogen Storage on functionalized graphene monolayer
Funzione o posto occupato / Occupation or position held	Ricercatore III livello
Principali mansion e responsabilità / Main activities and responsibilities	Growth of fluoride and oxide single crystals doped with rare earth trivalent ions, their optical and structural characterization (absorption, fluorescence, lifetime, X-ray Laue diffractometry). Study of the laser performances of crystal samples in CW and pulsed regime; Scanning Tunneling

Microscope imaging and thermal characterization of functionalized graphene monolayer for hydrogen storage.

ISTRUZIONE E FORMAZIONE / EDUCATION AND TRAINING

In ordine di data /Dates (from – to)	1989-1992 Grant at Istituto di Fisica Atomica e Molecolare – CNR – Pisa
[Iniziare con le più recenti ed elencare separatamente ciascun corso frequentato con successo/ Add separate entries for each relevant course you have completed, starting with the most recent.]	1988 Winner of PhD grant selection in Pisa and Milano University 1987 Degree on Physics (Dr) 1980 High School degree (Scientific Liceum)
Principali materie e competenze professionali apprese / Principal subjects occupational skills covered	Co-author in 70 papers

ATTIVITA' DI RICERCA / RESEARCH ACTIVITIES

- Hydrogen Storage on functionalized graphene monolayer from 2016 ;
- Growth and spectroscopy of fluoride and oxides single crystals doped with rare earths trivalent ions for laser applications from 2008 ;
- Magneto-Optical trapping of Fr atoms 2001-2006;
- Magneto-Optical trapping (MOT) of Rb atoms 2001-2006;
- Light Induced Atom Desorption (LIAD) of alkali atoms desorbed from organic coatings 2001-2006;
- Hydrogen loading of metals 1994-2001 ;
- Calorimetry and dielectrometry during thermoset curing 1990-92;
- Time Domain Reflectrometry (TDR) 1990-92;
- Differential calorimetry of liquids 1989-92;
- Laser spectroscopy of liquids in Far InfraRed region 1987-90.

Attuali campi di ricerca / Research sectors

Hydrogen Storage on functionalized graphene monolayer

From 2016 start a new research activity about hydrogen storage on functionalized graphene monolayer. The main goal of this activity was measuring the heat released during the hydrogen loading of a sample. This result has been recently achieved thanks to a sophisticated thermometric technique projected and developed by S. V.

Growth and spectroscopy of rare earth doped fluoride crystals

From april 2008 collaborates with a research group involved in the development of new materials for laser applications. The main research activities consist in the growth with Czochralski and μ-Pulling Down (μ-PD) techniques of fluoride crystals or oxides crystals, undoped and doped with rare earth ions. In such a frame he has developed materials utilized to realize laser sources, CW and pulsed, in the IR region. He has grown many fluoride hosts like LiYF4, LiLuF4, BaY2F8, KYF4, KY3F10, doped with Er, Pr, Ce, Tm and Ho. He has developed oxides (Lu3Al5O12) and fluorides (LiLuF4) single crystal fibers, grown by μ-PD technique, which gave, for the first time with this technique, laser performances close to Czochralski crystals. Moreover he performs the optical characterization as temperature dependent fluorescence, absorption and lifetime of fluoride or oxide samples doped with rare earth ions. This data allow determining the absorption and emission cross sections and gain curves that are useful in predicting the laser performances of the crystal samples. He is involved in several international collaborations and projects with MBI, ISL, Southampton University, Shandong University ….. He was the scientific coordinator of a LASERLAB-EUROPE (*Q-switching laser sources of thulium doped $LiLuF_4$ and BaY_2F_8 single crystals*) project and he is the Italian scientific coordinator of the project "Development of High Reliability Lasers at 461NM and 689NM (SR Lattice) and 422NM (Single trapped SR Ion)" ITT 1-8322/15/NL/RA funded by European Space Agency (ESA), contract n. 4000116340/16/NL/BJ, starting date 16/03/2016.

2001-2006

Light Induced Atom Desorption

By means of this effect, first observed in 1992, it is possible the release, induced by light, of alkali atoms from an organic coating which has been previously loaded. SV participate to experiments where LIAD has been successfully utilised to load a Rb MOT. Coatings that allow LIAD effect are suitable to work in high vacuum and ultra high vacuum environment and LIAD was recently utilised by T.W. Hansch and co-workers to load a Rb BEC. A similar behaviour of LIAD has been recently observed, in Siena, in porous glass systems, and SV is attempting to realise a MOT loading from this device. LIAD could help to improve the loading efficiency of MOTs from weak sources has in the francium case.

2001-2006

Rb MOT

SV actively helped during the realisation of two Rb MOTs that has been utilised for testing the coatings that are in use in the Fr experiment and in order to optimise the Fr optical set-up and detection systems.

2001-2008

Fr MOT

Few years ago started a collaboration between Siena University, Ferrara University and Legnaro National Laboratories (LNL) that was named "Francium Collaboration" to realise a trap for Fr in order to perform high resolution spectroscopy of Fr and had the ultimate goal to measure Atomic Parity Non Conservation (APNC). The experiment is included in the European network NIPnet. SV is involved in the experiment from its first funding. He designed and realised the gold target set-up and currently manage target maintaining, he had an active role in the realising of the Fr transport line and in the realisation of the optical set-up. Usually during beam time he has the responsibility, together with prof. Atutov, of Ti:sa laser care. Recently Fr collaboration obtained several evidence of trapped Fr and work is in progress to optimise trap loading efficiency and to maximise the number of trapped atoms.

1994-2001

Hydrogen loading of metals

S.V. had an active role in designing and realisation of several experimental cells for the study of hydrogen loading of metal samples (namely nickel and nickel alloys) in the temperature range 300 ÷ 800 K. The cells allowed a check of the energy balance and of ionising radiations coming from samples.

1990-1994

Time Domain Reflectrometry (TDR)

This technique allows to determine the complex dielectric permittivity of a liquid or powdered sample from the analysis of the frequency spectrum of the reflected step like signal. Usually TDR gives high sensitivity data in the frequency range 100MHz÷10GHz, range that was extended with a bridge technique to 20kHz. Measurements were performed on the same system studied with our calorimeter to acquire complementary information.

1989-1994

Differential calorimetry of liquids

In this experiment S.V. participate to the design of a calorimeter specially tailored for liquid samples, including acquisition and analysis software, working in the temperature range -50 ÷ 100 °C. This instrument was utilized to study reversed micelle systems (water-AOT) where water is confined in droplets having a diameter of about 10 A. Moreover we studied water n-butanol and water t-butanol solutions and finally we used this instrument to study biological solutions. This instrument was then modified to study epoxy resins (thermosets) during the curing process (patented).

1987-1990

Laser spectroscopy of liquids in the Far InfraRed region

The experimental set-up allowed the measurements of absorption coefficient and refractive index of liquids, in the range 8 ÷ 142 cm^{-1}, with the help of two different experimental cells. The first cell was a transmission one, for the measurements of the

light intensity transmitted by a variable thickness of liquids, while the second cell was a reflection one and it had a Fabry-Perot interferometer configuration for both refractive index and absorption coefficient measurements (cross check).

Pubblicazioni (2016-18)/ Articles

1. L. Basta, S.Veronesi, Y. Murata, Z. Dubois, N. Mishra, F. Fabbri, C. Coletti, S. Heun "*A Sensitive calorimetric technique to study energy (heat) exchange at the nano-scale*" Nanoscale **10**, 10079-10086 (2018)

2. Q. Hu, Z. Jia, S. Veronesi, J. Zhang, A. Sottile, M. Tonelli, E. Cavalli, Z. Tao "*Crystal growth and optimization of Pr:CaGdAlO$_4$ by the flux-Czochralski method*" CrystEngComm, **20**, 590-596 (2018)

3. S. Fiori, Y. Murata, S. Veronesi, A. Rossi, C. Coletti, S. Heun "*Li-intercalated Graphene on SiC(0001): an STM study*" Phys. Rev. B **96**, 125429 (2017)

4. W. Mu, Y. Yin, Z. Jia, L. Wang, J. Sun, M. Wang, C. Tang, Q. Hu, Z. Gao, J. Zhang, N. Lin, S. Veronesi, Z. Wang, X. Zhao, X. Tao "*An extended application of β-Ga$_2$O$_3$ single crystals to the laser field: Cr^{4+}:β-Ga$_2$O$_3$ utilized as a new promising saturable absorber*" RCS Advance **7** (35), 21815 (2017)

5. Q. Hu, Z. Jia, A. Volpi, S. Veronesi, M. Tonelli, X. Tao "*Crystal growth and spectral broadening of a promising Yb:CaLu$_x$Gd$_{1-x}$AlO$_4$ disordered crystal for ultrafast laser application*" CrystEngComm, **19** (12), 1643-1647 (2017)

6. P. Loiko, J.P. Serres, X. Mateos, S. Tacchini, M. Tonelli, S. Veronesi, D. Parisi, A. Di Lieto, K. Yumashev, U. Griebner and V. Petrov "*Comparative spectroscopic and thermo-optic study of Tm:LiLnF$_4$ (Ln= Y, Gd, Lu) crystals for highly-efficient microchip laser at ~2 μm*" Opt. Mat. Express **7**(3), 844 (2017)

7. E. Favilla, G. Cittadino, S.Veronesi, M.Tonelli, S. Fischer, J.C. Goldschmidt, A. Cassanho, H.P.Jenssen "*Comparative analysis of upconversion efficiencies in fluoride materials for photovoltaic application*" Sol. Cells **157**, 415, (2016)

8. F. Pirzio, M. Kemnitzer, A. Guandalini, F. Kienle, S. Veronesi, M. Tonelli, J. Aus der Au, and A. Agnesi "*Ultrafast, solid-state oscillators based on broadband, multisite Yb-doped crystals*" Opt. Express **24**, 11782, (2016)

9. A. Sottile, Z. Zhang, S. Veronesi, D. Parisi, A. Di Lieto, and M. Tonelli "*Visible laser operation in a Pr^{3+}:LiLuF$_4$ monocrystalline fiber grown by the micro-pulling-down method*" Opt. Mat. Express, **6** (6), 1964 (2016)