PROF.MAURIZIO DE CRESCENZI

Address:
Dipartimento di Fisica, Università degli Studi di Roma "Tor Vergata"
Via della Ricerca Scientifica 1, 00133 Roma (Italy)
Tel: +39 06 72594547 , e-mail: maurizio.decrescenzi@roma2.infn.it

SHORT BIOGRAPHY

Maurizio De Crescenzi was born in 1951 in Rome (Italy). Thesis "cum laude" in Solid State Physics (November 1975) at University of Rome "La Sapienza" (Italy). He is full professor from 1990 and from 2001 he has a chair of Structure of Matter at University of Rome "Tor Vergata" (Italy). His research activity has been focused on the study of the structural and electronic properties of clean surfaces, chemisorbed species on surfaces, metallic clusters and of metal/semiconductor interfaces by using spectroscopic techniques such as Auger, LEED, XPS and Energy Loss. He has worldwide known for the development of the EELFS (Extended Energy Loss Fine Structure) electron technique which allows the local structural investigation of surface and chemisorbed atoms. He has investigated the growth of nanostructures of Germanium/Silicon and Fe/Cu/Si ultrathin magnetic films through Molecular Beam Epitaxy process. Recently he has synthesized nanotubes of carbon and other nanomaterials and they have been investigated through STM and TEM microscopy and photocurrent measurements. He has demonstrated that carbon nanotubes can be used as efficient photon sensitive devices and solar cells. He has assessed for the first time the existence of silicon single wall nanotubes. In collaboration with R.Rosei and ISM researchers, he has assessed the formation and the structural properties of a single layer of graphite (graphene) on Ni(111) surface. This happened thirty years before of the assignment of the Nobel prize to Geim and Novoselov (2010) for the several properties and applications of graphene. They have recognized this discover in their Nobel laureate speech done at Stockholm in 2010.
He has participated to several European Projects (Esprit, Science, Galileo, Vigoni, Human Capital and Mobility) to develop new nanosized materials. He is co-author of about 290 international publications (his H index is 41), one book on electron and structural spectroscopies and several books on nanostructures acting as guest editor. He has organized as chairman several National (Nanotubes & Nanostructures 2000, 2001, 2002, 2003, Nanocose 2003, 2005) and International Conferences on surfaces and self-assembled nanostructures as co-chairperson with Isabelle Berbezier, from CNRS (France) (NanoSEA2006, NanoSEA2008, NanoSEA2010, NanoSEA2012, NanoSEA2014, NanoSEA2016). He is (or he has been) in the board of editors of four international Reviews (Nature: Scientific Reports, Journal of Electron Spectroscopy, Journal of Physics (Condensed Matter), Surface Review and Letters). He has acted twice (for 2006 and 2007) as international referee for the ANR (Agence Nationale de la Recherche) (France) as European expert in nanotechnology. In November 2009 he has received the title of Doctor "Honoris Causa" in Material Science awarded by the

University of Aix-Marseille (France). From 2010 is “associated researcher” at ISM-CNR and this is testified by several publications and requests of national and international funds.

Detailed Curriculum Vitae et studiorum of prof.M.De Crescenzi

Born in Rome 6 June 1951.
Thesis "summa cum laude" in Solid State Physics (November 1975) at the University "La Sapienza" of Rome (Italy), defending the work: "Magnetoluminescence and reflectance of the biexcitonic molecules in CdS". The thesis has been performed under the scientific direction of prof. A.Frova and prof.F.Evangelisti.
From 1976 (November) to 1979 (February) he has been postdoctoral fellow at Laboratoire d’Optique des Solides, Paris VI University, Paris (France), under the scientific direction of prof.F.Abeles and dr.Marie Luce Theye. He has studied optical and electronic properties in the visible and ultraviolet range of ultrathin noble metallic films using synchrotron radiation at Laboratory LURE, Orsay (France).
From 1979 at present his research activity has been focused on the study of the:
- optical properties of ultrathin films,
- structural, electronic and magnetic properties of condensed matter,
- surfaces (clean and interacting with chemisorbed species),
- metal/semiconductor interfaces and of carbon nano-materials by means of spectroscopic techniques such as Auger, XPS and Energy Loss in reflection and STM (Scanning Tunneling Microscopy) microscope.
- synthesis and characterization of Silicon single wall nanotubes.
- synthesis and photocurrent measurements of Carbon nanotubes as active transparent electrodes for solar cells and other nanomaterials to be used as renewable energies.
- synthesis, structural and electronic characterization of 2D materials (Graphene, Silicene).

Main scientific results:

During 1980-1983 years, he has contributed actively to the development of electronic spectroscopies for the determination of the electronic properties, the interatomic distance and the local structure of atoms located on a surface of a solid. The most important spectroscopic technique, recognized to prof.De Crescenzi, has the acronym of EELFS (Extended Energy Loss Fine Structure) and it consisted in the measurement of the features detected in an energy loss spectrum above a core level ionization performed in the reflection mode. The analysis of this fine structure has given the radial distribution function around the ionized atom and it has allowed clarifying some fundamental aspects of metallic surfaces, of interface metal-semiconductor and of chemisorption of carbon and oxygen on solid surfaces down to the atomic scale. Thanks to this technique prof. R.Rosei, researchers of CNR-ISM (dr.P.Perfetti and dr.C.Quaresima) and M.De Crescenzi have assessed for the first time the formation and the structural properties of a single layer of graphite (graphene) on Ni(111) surface (Physical Review B27, 1161 (1983)). This happened about thirty years before of the assignment of the Nobel Prize to Geim and Novoselov (2010) for the several properties and applications of graphene. They have recognized the original assessment performed by Rosei and coworkes in their Nobel laureate speech done at Stockholm in 2010. Nowadays the importance of EELFS technique in the field of surface science has been world wide recognized. In particular the technique has been cited by Ertl (Nobel prize for Chemistry 2007) and Küppers in their book on the electronic spectroscopies in which they reported the several techniques used for characterizing the surfaces, the thin films and in general the local structure around a specific surface atom. For illustrating the principles and applications of the EELFS technique Maurizio De Crescenzi has been invited at several international conferences and seminars on surface science and nanomaterials.

Teaching and academic activity:

M.De Cresenzi has been:
PhD position from November 1976 to November 1979 at CNRS (France) and at University of Paris VI, Paris (France).
Assistent Professor of Electromagnetic Waves at Calabria University, Cosenza (Italy) (1979-1983), Associated Professor of Physics Laboratory at L'Aquila University, L'aquila (Italy) (1984-1985)
Associated Professor at University of Rome "Tor Vergata", Roma (Italy) (1985-1990). During this period he has been appointed as member of the Administration Council of the University from 1987 to 1989.
In 1990 he has been appointed Full Professor of Solid State Physics at the Physics Department of the Camerino University, Camerino (Italy). During this period he has been nominated as chairman for the "Corso di Laurea in Fisica" and as a member of the Administration Council of the Camerino University (2004-2010).
In his laboratory he has developed a Molecular Beam Epitaxy (MBE) to grow germanium nanostructures deposited on silicon and he has been involved in the investigation of the structural and magnetic properties of ultra thin iron layers investigated by STM and MFM (Magnetic Force Microscopy).
From 2001 he has moved as Full Professor in Solid State Physics at Physics Department of University of Rome "Tor Vergata" (Italy). He is at present the head of a Laboratory of Nanoscience with three permanent researchers (prof.Paola Castrucci, dr.Manuela Scarselli and dr.Matteo Salvato), three PhD students and one research contract position.
Under his scientific and technical supervision more than 70 students have defended their thesis in Physics (five Doctorate in Physics) at the several Italian Universities. Most of them entered in the world of the research and are now diffused in Italy and in several parts of the world (Canada, Saudi Arabia, Australia, France, Denmark, etc).
He has been appointed (from 2011 until 2016) as the responsible of the Doctorate in Physics at the University of Roma "Tor Vergata".
During the last twenty years, he has participated to Commissions of numerous competitive examinations for research, associated and full professor positions in several Italian Universities (Lecce, Camerino, Padova, Roma Tor Vergata, Roma La Sapienza, Roma TRE, Cosenza, Torino Politecnico, Trieste).

Scientific experience and achievements:

From November 1975 to November 1976

He has collaborated with prof.A.Frova and prof.F.Evangelisti to the analysis of the data obtained by the thesis work.
He has collaborated with prof.E.Tosatti of SISSA and ICTP (Trieste, Italy) and Dr.G.Harbeke, of Laboratory RCA, Zurich (Switzerland) for studying the effects of spatial dispersion in the dielectric function of excitons and semiconductors.

From November 1976 to November 1977

He has obtained a fellowship of CNRS (Centre National de la Recherche Scientifique) under the direction of prof.F.Abeles (University of Paris VI, France) and Dr.Marie Luce Theye to investigate the optical properties of surfaces and interfaces through synchrotron radiation at LURE, Orsay, France. The experiences of reflectivity of thin films of Cu, Au and Cu(x)Au(1-x) alloys, deposited under ultra-high-vacuum conditions, have been performed in the spectral range 15-35 eV.

During the same period, he has collaborated with Dr.Wanda Andreoni (IBM, Zurich, Switzerland) and prof.E.Tosatti (SISSA, Trieste, Italy) to the interpretation of the excitonic lineshape of rare solid gases.

From November 1977 to February 1979:

Prof.De Crescenzi has obtained the following scholarships:
-Stage de Haut Niveau Scientifique assigned by the French Embassy at Roma, Italy (1 year),
-CEA (Centre Nucleaire pour L'Energie Atomique) (1 year),
-CNR (contributo per le relazioni internazionali) (3 months).
Such scholarships have been used to investigate optical measurements of ultrathin films of Silver and Gold near the plasma frequency. The aim was to study the effects of spatial dispersion in solid thin layers deposited in ultra vacuum conditions. The research activity has been developed at Laboratoire d'Optique des Solides of Paris VI (France) in collaboration with prof.F.Abeles and Dr. Marie Luce Theye.

From February 1979 to November 1979

He has obtained a fellowship of Centro Ricerche FIAT (CRF, Orbassano, Torino, Italy) to perform EXAFS (Extended X-ray Absorption Fine Structure) structural measurements through the synchrotron radiation of PULS-Frascati laboratory on sample of technological and metallurgical interest. He has investigated steels after high power laser treatment, ferritic and martensitic steels and amorphous metallic glasses. The experience has been done in collaboration with dr.U.La Malfa (of CRF Torino, Italy) and prof.A.Balzarotti (Roma Tor Vergata University, Italy). The analysis of the EXAFS spectra has allowed to investigate the radial distribution function of the several metallic alloys and to establish the degree of the local disorder in metallic glasses.

From November 1979 to November 1983:

He has collaborated with the Group of “Electronic Spectroscopies of Surfaces” directed by prof.R.Rosei at Cosenza University (Italy). He has used electronic analytical tools such as Auger, Energy Loss and X-ray Photoemission spectroscopy and LEED for the study of clean surfaces and upon interaction with different chemisorbed species such as Oxygen and Carbon. The use of the Energy Loss spectroscopy in reflection mode has allowed clarifying some new aspects of the interaction of the electrons with the solid matter. In particular, it has to be mention that for the first time from the analysis of an Energy loss spectrum from a core level, it has been possible to measure fine structure very similar to those reported in the EXAFS (Extended X-ray Absorption Fine Structure) spectra, which are detected by means of X-rays. The study of these features has been interesting for the structural analysis of clean surfaces and in the determination of the atomic distances from the chemisorbed species and the substrate. This type of measure has been the subject of a publication on the review Physical Review Letters. Useful application of this spectroscopic technique has been the structural determination of a graphitic layer deposited epitaxially on the Ni(111) surface after dissociation of CO at high temperature. This continuous carbon mono-layer showed the same structural properties of graphite and the EELFS measurement (Physical Review B**27**, 1161 (1983)) was one of the very first assessment of the graphene which has been awarded in 2010 with the Noble prize assigned to Geim and Novoselov for the several applications of this nanostructure.
In the same period, he has collaborated with prof.A.Balzarotti (University of Roma Tor Vergata) for the study of intermetallic alloys Ti-Fe, TiN and TiC alloys with the EXAFS spectroscopy.
He has collaborated with prof.S.Nannarone (University of Modena (Italy)) to the structural study of materials such as Pd2Si and Ni2Si of relevant technological and applicative interest.

Prof.M.De Crescenzi has collaborated with prof.M.Piacentini (University of Roma "La Sapienza") and Dr.F.Antonangeli of Laboratory PULS-INFN (Frascati (Italy)) to investigate the electronic and structural properties of pure metallic iron after high power laser treatment with the aim to obtain amorphous iron at room temperature.

From November 1983 to November 1985:

He has collaborated with the group of prof. P.Picozzi of L'Aquila University (Italy) to investigate the electronic and structural properties of metallic nano-aggregates (Cu, Au, Ag, Pd, etc.) deposited on inert substrates (graphite).
He has performed Auger, XPS and Energy Loss measurements to evidence the evolution of the electronic and structural properties of few isolated atoms up to the formation of a continuous film.
Prof.M.De Crescenzi has collaborated with prof.J.Derrien at Grenoble University (France) to perform structural surface measurements of ultra-thin Cobalt film deposited on clean Silicon surfaces through the EELFS (Extended Energy Loss Fine Structure) technique. The depositions and the measurements have been performed at room temperature and as a function of the several thermal treatments.

From November 1985 to November 1990:

He has collaborated with prof.A.Balzarotti (University of Roma "Tor Vergata", Italy) to equipe an Ultra-High-Vacuum machine to perform X-ray photoemission measurements (XPS) and inverse photoemission (BIS, Bremsstrahlung Isochromat Spectroscopy) and other several spectroscopic techniques to charcterize the materials and the surfaces. He has performed Auger and XPS measurements on magnetic semiconductors (CdMnTe) and on the high-Tc superconductors such as YBaCuO and BISCO, under the form of sinterized samples as well of thin solid films.
He has performed BIS and XPS measurements on small Palladium clusters, in collaboration with prof.A.Balzarotti and prof.M.Cini to clarify the modification of the electronic properties as a function of the cluster size and of the interaction with the substrate.
He has collaborated with prof.J.Derrien of Marseille University (France) to develop the analysis of the fine structures detected in the Auger spectra (EXFAS technique) to obtain the radial distribution function in the nearest of the deposited atom on the surface.
He has collaborated with prof.A.P. Hitchcock, at the Mc Master University (Canada), to investigate the structural properties of few monolayers of Copper deposited on Silver surface with the technique performed at grazing incidence to enhance the signal coming from the outer layers.
He has collaborated to an ESPRIT project funded by Europen Community, Basic Research Action, for the study the iron silicides grown on silicon surfaces, in collaboration with prof.J.Derrien (Marseille University, Marseille, France). Prof.De Crescenzi has equipped the apparatus, operating at Roma Tor Vergata University, Italy, with an STM (Scanning Tunneling Microscope) for the structural investigation of surfaces with atomic resolution. He has investigated the Silicon clean surface, reconstructed 7x7, and covered with several iron layers to form iron silice in the semiconductor and metallic phases. In collaboration with prof.A.Balzarotti and prof.M.N.Piancastelli (University of Paris VI, Paris, France), he has investigated the chemisorption of ethylene on clean Si(111), (7x7) reconstructed surface to investigate the atomic environment of the adsorption sites.

From November 1990 to November 2001:

Prof. De Crescenzi has won a chair of Structure of Matter, as a full professor, and he has moved to Camerino University (Italy). He has collaborated with prof. I.Davoli to form a group of electron spectroscopy of surfaces. In particular, from 1991 to 1994 he has interested to experiences of diffusion of photoelectrons from surfaces and interfaces of monocrystals such as MgO (oriented 100). In 1993 he has obtained a financial grant, funded by MURST (funds for "Grandi apparecchiature"), to realize

an apparatus for MBE (molecular beam epitaxy) for the growth of hetero-structures of Germanium deposited on Silicon wafers, their alloys and their electronic and structural characterization. In these years, he has interested to grow superlattices of semiconductors for possible applications as optolectronic devices.
He has received a grant of 350 MLire from INFM, through a PRA (Progetto di Ricerca Avanzato) project, to equipe an STM apparatus in ultra-high-vacuum to measure the magnetic surface domais of iron ultrathin films deposited on Silicon clean surfaces.
He has collaborated with prof.F.Rochet (University of Paris VI, Paris, France) and prof.R.Gunnella (University of Camerino, Camerino, Italy) to investigate the chemisorption of acetylene on clean Silicon surfaces and the formation of silicon carbide layers. The structural measurements have performed by using the photodiffraction of electrons (XPD technique).

From November 2001 at present:

He has investigated several aspects of the interaction of hydrocarbon molecules with silicon surfaces to form ordered and epitaxial film of silicon carbide. He has synthesized by CVD (Chemical Vapor Deposition) method carbon nanotubes both single and multiwall. The atomic and electronic characterizations have been performed through STM, SEM, TEM and Raman techniques. He has collaborated actively with prof.M.Ali El Khakani and prof.F.Rosei (INRS, University of Montreal, Montreal, Canada) to investigate the electronic and structural properties of single wall carbon nanotubes obtained by laser ablation and measured by STM with atomic resolution.
In collaboration with prof. S.V.Bhoraskar (Pune University, Pune, India) he has assessed with STM and TEM the possibility for Silicon to synthesize under the form of single wall nanotube. This experience has demonstrated that physical systems with sp3 coordination can, in particular growth conditions, synthesize as sp2 without showing any oxidation process. The work has been quoted and discussed on the web site Wikipedia at the link:
http://en.wikipedia.org/wiki/Silicon_nanotubes#External_links.

He has demonstrated the ability of multiwall carbon nanotubes to generate photocurrent in the near ultraviolet and visible spectral range using electrochemical photocurrent measurements. This result is of particular relevance in the field of photovoltaic nanodevices and for solar energy conversion applications. The solar cells obtained by depositing few tens of nanometers of Carbon nanotubes on Silicon surfaces have shown a PCE (Photocurrent efficiency) of about 13% and and EQE (External quantum efficiency) of 90%. More recently, he has demonstrated that carbon nanotubes deposited on amorphous silicon produced a sizeable photocurrent in the visible energy range. The measured external quantum efficiency showed a spectral behavior depending on the SWCNT network optical transparency, presenting a maximum up to 40% at a wavelength of about 460 nm. Ultrathin network of SWCNTs acts as semitransparent electrode and forms Schottky barrier with amorphous silicon, enabling new generation low cost amorphous silicon based solar cells. In collaboration with prof.N.Motta, Queensland University of Technology (QUT), Brisbane (Australia), prof.De Crescenzi has investigated with STM and high resolution TEM the interaction of Poly(3-hexyl-thiophene) with carbon nanotubes. The structural techniques have assessed an interesting coiling of the polymers around the carbon nanostructures. These investigations are important to enhance the electron current produced in solar cells.
More recently he has been involved in the synthesis and characterization of multi-walled carbon nanotubes grown by CVD method without the use of metallic catalyst directly on stainless steel. The experiences have been done in close collaboration with prof.Serge Lefrant (IMN-CNRS, University of Nantes, France). At present, he has been interested in the synthesis and structural characterization of new 2D nanomaterials such as silicene, that would mimic the structure of graphene, with the aim of better integration into the nanoelectronic industrial circuitry based on silicon technology.

International invited positions:

He has been invited in 1985 to spend several research periods as a "visiting professor" at the "Fourier" University in Grenoble (France) and at University of Marseille, Marseille (France), in collaboration with prof. J.Derrien, to investigate some structural aspects of the deposition (growth, interaction and alloy formation) of transition-metals nanostructures deposited on clean silicon surfaces. He has spent three months in 1987 at the McMaster University (Hamilton, Canada) in collaboration with prof. A.P.Hitchcock to study of the growth mechanisms of metallic monolayers epitaxially evaporated on metals with the help of EELFS and EXFAS electron spectroscopies. He has been invited in 1995 at the University Paris VI, Paris (France) (one month) to study the interaction of carbon-based molecules with silicon surfaces in collaboration with prof.F.Rochet. More recently (2004-2009) he has been invited, as invited professor and invited CNRS researcher, at the laboratory L2MP-CNRS and then at IM2NP-Aix Marseille University, Marseille (France) to collaborate with Dr.Isabelle Berbezier to investigate several chemical and physical properties of the of Germanium quantum dots deposited on silicon oxide layers and 2D nanomaterials such as silicene.

National and International Research Projects:

Prof.De Crescenzi has received the following research funds:

-International Research Contact CNR for 1984-1987.
prof.De Crescenzi and his collaborators have performed Energy loss measurements in grazing incidence at Service de Physique des Atomes et des Surfaces of C.E.A. (Centre pour l'Energie Atomique) of Saclay (France) in collaboration with prof.J.Lecante.

-Research Contract CNR n.86.02642.02 assigned in 1986 (35 MLire) to investigate electronic and structural measurements of surfaces and interfaces at Roma Tor Vergata University (Italy).

-Research Contract CNR n.87.02557.02 assigned in 1987 (50 MLire) for the development of the project: "Electronic and structural properities of ceramic materials" at Roma Tor Vergata University (Italy).

-International bilateral Contract CNR Italy-France1988.
Prof.De Crescenzi has collaborated with prof.J.Derrien (University of Marseille, France) to investigate the growth of ultrathin films of Cobalt deposited on clean Silicon surface through Auger spectroscopy.

"Action des Stimulation" of European Economic Community 1988.
He has been the Italian PI of a bilateral project among the Laboratory LEPES of Grenoble, France, in collaboration with prof.C.Schlenker, and the Physics Department of Roma Tor Vergata University, Italy. Prof.De Crescenzi has received a finantial support of 90 MLire for the spectroscopic characterization of super-conductors thin films.

"Esprit Basic Research Action" N.3026 of CEE 1989.
In collaboration with prof.J.Derrien and other europen resaerch laboratories, prof.M.De Crescenzi has received a financial support of 200 MLire for the acquisition at Roma Tor Vergata University, Italy, of a Scanning Tunneling Microscopy (STM) apparatus for characterize with atomic resolution heterostructures of layers of metal deposited on clean Silicon surfaces.

In 1993 he has obtained a financial grant, funded by MURST (funds for “Grandi apparecchiature”), of 800 MLire, to realize at Camerino University an apparatus for MBE (molecular beam epitaxy) for the growth of hetero-structures of Germanium deposited on Silicon surfaces.

In 1996 he has obtained from CNR a financial support of 30 MLire to perform resistivity measurements and electronic characterizations of ultrathin films of Lead deposited on clean Silicon surfaces to investigate possible superconductor behaviour. The measurements have been done in collaboration with prof.A.Bianconi University of Roma “La Sapienza”, Roma Italy).

In 1997 he has obtained from INFM (Istituto Nazionale di Struttura della Materia) a financial contract of 350 MLire through a PRA (Progetto di Ricerca Avanzato called SIMBRIS) in collaboration with Ferrara University (Italy) and Perugia University (Italy) for the acquisition at Camerino University, Italy, of a STM and MFM (Magnetic Tunneling) microscope operating in ultra-high-vacumm. The project has been focused to the characterization of the magnetic domains of ultrathin films of Iron and Nickel deposited on clean Silicon surfaces.

In 1998 he has obtained 100 MLire, with a project PAIS of INFM (acronym SICSAF) in collaboration with Modena University (Italy), prof. U.Del Pennino, for the development of growth techniques of epitaxial films of SiC deposited on clean Silicon surfaces.

In 2000 he has received a financial support of 220 MLire from MURST, PRIN2000 (Progetto di Ricerca di Interesse Nazionale), in collaboration with the Ferrara University (Italy), project directed by prof. F.Nizzoli and with Perugia University (Italy). Prof.De Crescenzi has acquired an electron analyzer to perform photodiffraction measurement to characterize ultrathin magnetic films and their electronic properties.

In 2000 he has obtained a financial support from INFM of 100 MLire, with a project PAIS (called SiMag) for characterize the growth of magnetic nanodots deposited on Silicon clean surfaces with STM and MFM spectroscopies.

He has received from Italian Ministry of Research a PRIN2005 of 210.000 € to synthesize carbon nanotubes for photovoltaic applications. The growth apparatus for CVD method was operative at Roma Tor Vergata University, Roma (Italy).

He has been appointed by the Italian Ministry of Foreign Affairs of a bilateral project 2007-2008 and 2008-2009 in collaboration with prof.M.Ali El Khakani (INRS, Montreal, Canada). Project title: "Photovoltaic application of carbon nanotubes", 120000 €, focused on the area of photoinduced electron transfer, which are expected to make important contributions for the construction of efficient photovoltaic devices. This project has been awarded by the Chamber of Commerce of Quebec with “Venice 2010” prize.

He has received funds by ISPELS and Italian Ministry of Health, 2008-2009, for a project: "Innovative methodologies for risk exsposure to carbon nanotubes and other nanomaterials", 70000 €.

He has been awarded from INFN (Istituto Nazionale di Fisica Nucleare, Italy) with the project SinPhoNIA (Single Photon Nanotechnology Innovative Approach), under the direction of Dr.M.Ambrosio (Section INFN-Napoli, Italy), in 2008 and 2009, with 20000 € to investigate new detectors for high-energy physics.

prof. De Crescenzi has received funds (250.000$) from Queensland Government (Australia) in collaboration with prof.Nunzio Motta (QUT University, Brisbane, Australia), through a NIRAP project, to investigate new carbon nanotubes detectors working in harsh environments.

He has been the Italian responsible of the bilateral (French-Italian) project Galileo (2008-2010)" New Solar cells with carbon nanotubes" in collaboration with prof. Serge Lefrant of University of Nantes (France).

He has been the Italian responsible of the bilateral project (Italian-German) Vigoni: "Epitaxial growth of organic layers on semiconductors" (2010-2012) in collaboration with prof.Patrick Vogt of TU of Berlin (Germany).

Prof.M.De Crescenzi has received funds in 2010 from EOARD ((European Office of Aerospace Research and Development) through Air Force Office of Scientific Research Material Command, USAF, for developing new solar cells based on carbon nanotubes: "Development of new photovoltaic research & hydrid devices based on multiwall carbon nanotubes and metal nanoparticles" Grant FA8655-11-1-306,

2010-2012 Project NIRAP "Solar Program and powered nano-sensors for data acquisition and surveying in remote areas ", funded by the Queensland State and QUT University (Australia), PI of the Italian node, to investigate new carbon nanotubes detectors working in harsh environments.

2010-2011 Project GALILEE Università Franco-Italiana UIF "Optoélectroniques des ystèmes hybrides basés sur les nanotubes de carbone et nanoparticules metalliques", principal investigator "Nanotubes reconnaissance chimique: études par photoémission temps reel".

2012 Project GALILEE, Università Franco-Italiana UIF, Principal Investigator of the project: "Nanotubes reconnaissance chimique: études par photoémission temps réel".

2013-2015 EOARD-USAF, (USA): "3D carbon nanotube networks as mechanical, electrical and photovoltaic transducer and super-hydrophobic filter" Grant FA9550-14-1-0047.

2015 Europen Project CoExAn (Collective Excitations in Advanced Nanostructures), MSCA-RISE-2014, experimental Project Investigator of the Italian node.

2016 Regional project "Nanopoli" funded by the Lazio Region (Italy) for the development of new materials obtained by mixing carbon nanotubes with different polymers.

Organization of Conferences and scientific events:

He has organized several National and International Conferences on surfaces and nanostructures. In particular from 2000 to 2003 he has initiated the international workshop and the school N&N (Nanotubes and Nanostructures) (http://www.lnf.infn.it/conference /nn2000/, /2001/, /2002/, /2003/) in collaboration with Dr.S.Bellucci (INFN, Frascati, Italy) and two editions of the Italian National Meeting on Nanostructures "Nanocose" (http://nanocose.roma2.infn.it/) sponsored by INFM (Istituto Nazionale di Fisica della Materia). He has organized, in collaboration with Dr. Isabelle Berbezier (CNRS, Maresille, France), the International Conference NanoSEA2006 (Nano-Structures Self-Assembling), Aix-en-Provence (France), 2-6 July 2006. He has organized, in collaboration with Dr. I.Berbezier, the Symposium: "Nanoscale Self-assembly and Patterning" which has been held in Strasbourg (France) within the E-MRS Spring Meeting, May 28 to June 1, 2007. He has organized as co-chairperson, in collaboration with Dr. Isabelle Berbezier, the International Conferences

"NanoSEA2008" (held in Rome, 7-10 July 2008), NanoSEA2010 (Cassis, France) and NanoSEA2012 (Sardinia, Italy) (http://nanosea.roma2.infn.it/). He has organized the national meeting : "Structure and Surfaces" held in October 2009 in Roma "Tor Vergata University", in occasion of the 70th birthday of prof.A.Balzarotti. He has organized as co-chairman, in collaboration with dr.Isabelle Berbezier, NanoSEA2014 and NanoSEA2016.
He has organized as chairman the International Workshop: "Ligth on Surfaces" held in Villa Mondragone (Frascati, Italy) in July 2010 in occasion of the 70th birthday of prof.Renzo Rosei.
He has been the chairman, together of prof.N.Motta, of the international workshop Nano3E held in Brisbane (Australia) in September 2009 and in the following edition of September 2011.

Papers, peer reviewed works, editorial and internation committee and referee action:

His Hirsch factor is 41 and his works have been cited more than 5400 times.

He is author and coauthor of more than 280 international publications with peer review and of a book: "Electron Scattering and Related Phenomena", World Scientific, Singapore 1996, written in collaboration with prof. M.N. Piancastelli, on electronic and structural properties of the surfaces and applications of electron scattering.

In 1995, he has written a review paper published on Surface Science Reports on the EELFS electron spectroscopy that he has actively developed during his research activity.

He has been the guest Editor of several books and special issues of reviews on nanostructures and surface physics appeared on Journal of Physics (Condensed matter) (three special issues), Surface Science in 2007, Superlattices and Microstructures in 2009 and Thin Solid Films (2013). Beilstein Journal of nanotechnology (2015) and Beilstein Journal of Nanotechnology (2017). He has written the prefaces of all these books.

He has been in the board of editors of the following international reviews:
-Journal of Physics (Condensed Matter) from 2000 to 2004
-Surface Review and Letters (at present)
-Journal of Electron Spectroscopy (until 2010)
-Nature: Scientific Reports (from 2011 at present).

International Referee: He has been in the board of evaluation of the ANR (Agence Nationale de Recherche) (France) in 2006 and 2007 (P-Nano) as european expert on nanostructures and nanotechnology.

He has been involved several international Committees for synchrotron radiation (ESFR, Grenoble), Lure and SuperACO (Orsay, France) and Elettra (Trieste, Italy).

He has acted as referee of papers submitted to several international Journals: Surface Science, Journal of Electron Spectroscopy, Journal of Physics, Physical Review B, Superlattices and Microstructures, Thin Solid Films, Applied Surface Science.

International recognition:

Prof.M.De Crescenzi has partecipated in the Committee of a number of Thesis defended in European and over-sea Universities (Grenoble, Paris VI, Marseille, Lausanne, Berlin, Montreal)

He has acted twice (for 2006 and 2007) as international referee for the ANR (Agence Nationale de la Recherche) (France) as European expert in nanotechnology.

He has been nominated in 2007 as international expert to evaluate the research activity of the CNRS-IMN Laboratory at Nantes (France).

The project "Photovoltaic application of carbon nanotubes", done in collaboration with prof.M.Ali El Khakani (Montreal University, Canada), has been awarded by the Chamber of Commerce of Quebec with "Venice 2010" Prize.

In November 2009 he has been awarded of the title of Doctor Honoris Causa in Physics at the University of Marseille (France). He has received this international recognition for his important contributions given on the field of research on nano-materials and on electronic characterizations.

Research Opportunity and Performance Evidence - Ten career-best research outputs of M.De Crescenzi

The publications of Prof.M.De Crescenzi on international reviews have obtained, until 2018, more than 5564 citations and a Hirsch factor is 41, according Google Scholar at:
https://scholar.google.it/citations?user=TC-mI00AAAAJ&hl=it .

The following list of publications has been chosen to show the constant and considerable contribution given by the candidate in the field of synthesis and characterization of surfaces, structure of matter and nano-materials.

The following list is not necessarily based on the total citation numbers, but also to the general relevance and past/expected impact of the work in the scientific community.

1) **First demonstration of graphene on Ni(111) 25 years before the discovery by Geim and Novoselov**

R Rosei, M De Crescenzi, F Sette, C Quaresima, A Savoia, P Perfetti "Structure of graphitic carbon on Ni (111): A surface extended-energy-loss fine-structure study" Physical Review B 28, 1161 1983. (Impact factor (IF) 3.5, Cited 208 times)

This paper demonstrates the formation and the structural properties of a single layer of graphite (graphene) deposited on a metallic Ni(111) surface through a new electron spectrocopy. This happened thirty years before of the assignment of the Nobel Prize to Geim and Novoselov (occurred in 2010)

2) **Electronic and structural properties of metallic clusters**

M.Cini, **M.De Crescenzi**, F.Patella, N.Motta, M.Sastry, F.Rochet, R.Pasquali, A.Balzarotti, C.Verdozzi, "Palladium clusters on graphite : evidence of resonant hybrid states in the valence and conduction bands" Physical Review B41(9), pp. 5685-5695 (1990). (IF 3.5, Cited 83 times).

We have investigated the electronic and structural properties of small metallic Pd clusters deposited on inert graphite substrate. The theory has explained the energy shifts observed in the valence band, empty states above the Fermi level, Auger spectra and core levels as a function of the cluster size with a unique model which accounted of the interaction between cluster atoms and the substrate.

3) **STM Investigation of surfaces and chemisorbed species on clean surfaces**

M.N.Piancastelli, N.Motta, A.Sgarlata, A.Balzaroti, **M.De Crescenzi**, "Topographic and spectroscopic analysis of ethylene adsorption on Si(111) 7x7 STM and STS", Physical Review B 48(24), 17892-17896 (1993). (IF 3.5, cited 73 times)

We have reported the adsorption of ethylene C2H4 on Si(111) by STM and scanning tunneling spectroscopy. The spatial distribution of the surface reaction has been visualized on an atom-by-atom basis. Reacted and unreacted sites of Si have been selectively imaged.

4) **Growth of Germanium layers on Silicon substrates**

N.Motta, A.Sgarlata, R.Calarco, Q.Nguyen, J.Castro Cal, F.Patella, A.Balzarotti, **M.De Crescenzi**, "Growth of Ge/Si(111) epitaxial layers: intermixing, strain relaxation and islands formation", Surface Science 406(1), 254-263 (1998). (IF 2.5, cited 85 times).

We have followed by scanning tunneling microscopy (STM) the growth of thin Ge films obtained by reactive deposition epitaxy on Si(111) substrates kept at 500° C. Several surface reconstructions and different Ge clusters have been visualized.

5) **Growth and characterizations of films of Silicon carbide**

G.Dufour, F.Rochet, F.C.Stedile, Ch.Poncey, **M.De Crescenzi**, R.Gunnella, M.Froment, "SiC formation by reaction of Si(100) with acetylene: electronic and growth mode", Physical Review B 56(7), 4266-4282 (1997). (IF 3.5, cited 89 times).

The carbonization process of Si(001) exposed to acetylene has been studied by x-ray photoemission spectroscopy, x-ray photoelectron diffraction, reflection-electron energy loss spectroscopy and low-energy electron diffraction.

6) **Third generation of solar cells by using hybrid system with thin carbon nanotubes**

P. Castrucci, F. Tombolini, M. Scarselli, E. Speiser, S. Del Gobbo, W. Richter, **M. De Crescenzi**, M. Diociaiuti, E. Gatto, M. Venanzi, "Large photocurrent generation in multiwall carbon nanotubes", Applied Physics Letters 89(25), 253107 (2006). (IF 4.5, cited 62 times).

We demonstrated, for the first time, the ability of multiwall carbon nanotubes to generate photocurrents in the near ultraviolet and visible spectral ranges by using electrochemical photocurrent measurements.

7) **New 2D nanomaterials with sp2 configuration: silicon nanotubes**

M.De Crescenzi, P.Castrucci, M.Scarselli, M.Diociaiuti, P.S.Chaudari, C.Balasubramanian, T.M.Bhave, S.V.Bhoraskar, "Experimental images of silicon nanotubes", Applied Physics Letters 86, 231901-3 (2005). (IF 4.5, cited 129 times).

We have reported for the first time experimental evidence of the synthesis of clean silicon nanotubes showing a very thin wall. The TEM and EELS spectra performed on each single nanotube showed that non-oxidized silicon atoms constitute them.

8) **3D meshes of carbon nanotubes guide neuronal reconnections**

S. Usmani, E.R.Aurand, M.Medelin, A.Fabbro, D. Scaini, J. Laishram, F. B Rosselli, A. Ansuini, D. Zoccolan, M. Scarselli, **M. De Crescenzi**, S. Bosi, M. Prato, L.Ballerini "3D meshes of carbon nanotubes guide functional reconnection of segregated spinal explants" Science Advances 2 (7), e1600087 (2016) DOI: 10.1126/sciadv.1600087. (cited 28 times).

In modern neuroscience, significant progress in developing structural scaffolds integrated with the brain is provided by the increasing use of nanomaterials. We showed that a multiwalled carbon nanotube self-standing framework, consisting of a three-dimensional (3D) mesh of interconnected, conductive, pure carbon nanotubes, could guide the formation of neural webs in vitro where the spontaneous regrowth of neurite bundles is molded into a dense random net. This morphology of the fiber regrowth shaped by the 3D structure supports the successful reconnection of segregated spinal cord segments.

9) **Record efficiency of air-stable multi-walled carbon nanotube/silicon solar cells** F.DeNicola, M.Salvato, C.Cirillo, M.Crivellari, M. Boscardin, M. Scarselli, F.Nanni, I.Cacciotti, **M.De Crescenzi**, P.Castrucci "Record efficiency of air-stable multi-walled carbon nanotube/silicon solar cells" Carbon 101 (2016) 226-234 (IF 6.45, cited 16 times).

Multi-walled carbon nanotube (MWCNT) films form efficient heterojunction solar cells with n-type crystalline silicon (n-Si), due to their superior optical and electrical properties. We reported air-stable photovoltaic devices with world record photoconversion efficiency of 10%. We realized thin films consisting of MWCNTs arranged in semitransparent random networks deposited on n-Si substrates by a simple, rapid, reproducible, and inexpensive vacuum filtration process at room temperature. Such heterojunctions favor high and broadband carrier photogeneration, extending the Si spectral response from near infrared to near ultraviolet range. These results not only pave the way for low-cost, efficient, and broadband photovoltaics, but also are promising for the development of MWCNT-based optoelectronic applications.

10) New 2D nanomaterials with sp2 configuration: epitaxy of silicene on graphite M.De Crescenzi, M.Scarselli, P.Castrucci P, M.Abbarchi, F.Jardali, A.Ronda, I.Berbezier, H.Vach," Formation of Silicene Nanosheets on Graphite", ACS Nano 10(12),11163–11171 (2016). (IF 13.94, cited 10 times).

We deposited silicon on a chemically inert graphite substrate at room temperature. Based on atomic force microscopy, scanning tunneling microscopy, and ab initio molecular dynamics simulations, we revealed the growth of 2D silicon nanosheets with honeycomb configuration and where the substrate−silicon interaction is minimized. Similar to the carbon atoms in graphene, each of the

silicon atoms has, in fact, three nearest and six second nearest neighbors, thus demonstrating its dominant sp2 configuration. This is a new form to synthesize silicon that for its own nature prefers to crystallize in the sp3 configuration like diamond.

Publications on International Journals with peer review of prof.Maurizio De Crescenzi

1976

1) "Magnetoluminescence and reflectance investigation of the CdS biexciton"
F.Evangelisti, M.Capizzi, M.De Crescenzi, A.Frova, G.Baldacchini,
Solid State Communications **18**, 795 (1976).

1977

2) "Alloy and surface layers studies by differential reflectivity measurements"
D.Beaglehole, M.De Crescenzi, B.Thieblemont, M.L.Theye, G.Vuye,
Proc.Vth Intern.Conf.on Vacuum Ultraviolet Physics, eds. M.C.Castex,
M.Pouey, N.Pouey, Montpellier (France) 1977, 73.

3) "d-electron excitation in Au-Cu alloys between 18 and 30 eV"
D.Beaglehole, M.De Crescenzi, B.Thieblemont, M.L.Theye, G.Vuye,
Proc.Vth Intern.Conf.on Vacuum Ultraviolet Physics,
eds.M.C.Castex, M.Pouey, N.Pouey, Montpellier (France) 1977, 76.

4) "Surface effects in the ultraviolet reflectance of exciton in solid rare gases"
W.Andreoni, M.De Crescenzi, E.Tosatti,
Proc.Vth Intern.Conf.on Vacuum Ultraviolet Physics,
eds.M.C.Castex,M.Pouey,N.Pouey,Montpellier (France) 1977, 220.

1978

5) "Energy dissipation by free exciton polaritons in semiconducting films"
M.De Crescenzi,G.Harbeke, E.Tosatti,
Proc.14th Internat.Conf.on Semiconductors, ed.B.L.H.Wilson,The Institute of Physics, Edinburgh (Great Britain) 1978, 855-860.

6) "Dead layer effect in the ultraviolet reflectance of excitons in solid rare gases"
W.Andreoni,M.De Crescenzi, E.Tosatti,
Solid State Communications **26**, 425 (1978).

1979

7) "Reflectance spectroscopy of Ag surface layers on Au and Al substrates"
M.De Crescenzi, T.Lopez-Rios, G.Vuye, N.J.Mansur, Y.Borensztein,
Thin Solid Films **57**, 89(1979).

8) "The dielectric constant of gold,copper alloys between 18 and 35 eV"
D.Beaglehole, M.De Crescenzi, M.L.Theye, G.Vuye,
Physical Review B**19**, 6303 (1979).

9) "Contribution of longitudinal polarization waves to the optical properties of Ag surface layers"
T.Lopez-Rios, M.De Crescenzi, Y.Borensztein,
Solid State Communications **30**, 755 (1979).

10) "The effect of spatial dispersion on the attenuation of excitons polaritons in semiconducting films"
M.De Crescenzi, G.Harbeke, E.Tosatti,
Solid State Communications **31**, 457 (1979).

1980

11) "Optical evidence for longitudinal waves in very thin Ag layers"
F.Abeles, Y.Borensztein, M.De Crescenzi, T.Lopez-Rios,
Surface Science **101**, 123 (1980).

12) "EXAFS spectroscopy of amorphous Fe-Ni steels"
M.De Crescenzi, A.Balzarotti, F.Comin, L.Incoccia, S.Mobilio, D.Bacci,
Journal de Physique **41-**C8, 238 (1980).

1981

13) "EXAFS measurements on Fe-B metallic glasses: asymmetry of the radial distribution function"
M.De Crescenzi, A.Balzarotti, F.Comin, L.Incoccia, S.Mobilio, N.Motta,
Solid State Communications **37**, 921 (1981).

14) "Effects of the asymmetry of the radial distribution function in the EXAFS of metallic glasses"
M.De Crescenzi, A.Balzarotti, F.Comin, L.Incoccia, S.Mobilio, N.Motta,
Proc.of the Daresbury Study Weekend: "EXAFS for inorganic systems"
Edited by C.D.Garner e S.S.Masnam (1981),199.

15) "Multipole and spin-flip interband transitions in the electron energy loss of ferromagnetic Fe"
L.S.Caputi, E.Colavita, M.De Crescenzi, S.Modesti, L.Papagno, R.Scarmozzino, R.Rosei, E.Tosatti
Solid State Communications **39**, 117 (1981).

16) "Extended ELS fine structure above the M23 edges of Cu and Ni"
M.De Crescenzi, L.Papagno,G.Chiarello,R.Scarmozzino,E.Colavita,R.Rosei,S.Mobilio,
Solid State Communications **40**, 613 (1981).

1982

17) "Single particle and collective excitations in ferromagnetic Iron from Electron Energy Loss spectroscopy"
E.Colavita, M.De Crescenzi, L.Papagno, R.Scarmozzino, L.S.Caputi, R.Rosei, E.Tosatti,
Physical Review B**25**, 2490 (1982).

18) "Electronic relaxation effects on X-ray spectra of Titanium and transition metal carbides and nitrides"
A.Balzarotti, M.De Crescenzi, L.Incoccia,
Physical Review B**25**, 6349 (1982).

19) "Radial distribution function of Cu and Ni by reflection Energy Loss spectroscopy"
L.Papagno,M.De Crescenzi,G.Chiarello,E.Colavita,R.Scarmozzino,L.S.Caputi, R.Rosei
Surface Science **117**, 525 (1982).

20) "Structure related effect in the electronic properties of Fe80B20 alloys"

E.Colavita, M.De Crescenzi, L.Papagno, L.S.Caputi, G.Chiarello,
R.Scarmozzino, R.Rosei,
Solid State Communications **41**, 545 (1982).

21) "Graphite: electronic and structural properties studied by electron energy loss and secondary electron emisssion spectroscopy"
L.Papagno, L.S.Caputi, M.De Crescenzi, R.Rosei,
Physical Review B**26**, 2320 (1982).

22) "Surface Extended Energy Loss Fine Structure above the K-edge of oxygen on Al"
M.De Crescenzi, G.Chiarello, E.Colavita, R.Rosei,
Solid State Communications **44**, 845 (1982).

23) "Energy Loss spectroscopy study of the electronic properties alloys"
E.Colavita,M.De Crescenzi,L.Papagno,R.Scarmozzino,G.Chiarello,L.S.Caputi,R.Rosei
Proc.**IV**th Internat.Conf.on Rapidly Quenched Metals,
eds.T.Masumoto, K.Suzuki, The Japan Institute of Metals,Sendai 1982, 1271.

1983

24) "Electronic properties of Fe80B20 alloys: ordering and disordering effects"
M.De Crescenzi, E.Colavita, L.Papagno, G.Chiarello, R.Scarmozzino,
L.S.Caputi, R.Rosei,
Journal of Physics F**13**, 895 (1983).

25) "Structural and electronic properties of Fe and TiFe from extended and near edge structure"
N.Motta, M.De Crescenzi, A.Balzarotti,
Physical Review B**27**, 4712 (1983).

26) "Surface extended energy loss fine structure of oxygen on Ni(100)"
M.De Crescenzi, F.Antonangeli, C.Bellini, R.Rosei,
Physical Review Letters **50**, 1942 (1983).

27) "Temperature induced asymmetric effects in the surface extended energy loss fine structure of Ni (100)"
M.De Crescenzi, F.Antonangeli, C.Bellini, R.Rosei,
Solid State Communications **46**, 875 (1983).

28) "Structure of graphitic carbon on Ni (111): a surface extended energy loss fine structure study"
R.Rosei, M.De Crescenzi, F.Sette, C.Quaresima, A.Savoia, P.Perfetti,
Physical Review B**27**, 1161 (1983).

29) "Extended Energy Loss Fine Structure technique: bulk and surface investigation"
M.De Crescenzi,
"EXAFS and Near Edge Structure"eds.A.Bianconi , L.Incoccia, S.Stipcich,
Springer Verlag Series in Chemical Physics **27**,382 (1983).
(invited paper at 1th International Conf. on EXAFS and XANES, Frascati, September 1982).

30) "Multiple scattering effects in the EXAFS of Fe and TiFe"
N.Motta,M.De Crescenzi,A.Balzarotti
"EXAFS and Near Edge Structure" eds.A.Bianconi, L.Incoccia, S.Stipcich,

Springer Verlag Series in Chemical Physics **27**, 103 (1983).

31) "Geometrical structure of graphitic carbon on Ni(111) studied by Extended Energy Loss Fine Structure spectroscopy (EELFS)"
S.Modesti, M.De Crescenzi, P.Perfetti, C.Quaresima, R.Rosei, A.Savoia, P.Perfetti
"EXAFS and Near Edge Structure" eds.A.Bianconi,L.Incoccia,S.Stipcich,
Springer Verlag Series in Chemical Physics **27**, 394 (1983).

32) "Oxygen on Ni (100): a surface extended energy loss fine structure study"
F.Antonangeli,C.Bellini,M.De Crescenzi,R.Rosei,
"EXAFS and Near Edge Structure" eds.A.Bianconi,L.Incoccia, S.Stipcich,
Springer Verlag Series in Chemical Physics **27**, 397 (1983).

1984

33) "Structural study of Fe and iron carbide by EELFS"
S.Polizzi, F.Antonangeli, G.Chiarello, M.De Crescenzi,
Surface Science **136**, 555 (1984).

34) "Extended fine structures above Ti L23 edge: a comparison between reflection energy loss and EXAFS results"
M.De Crescenzi, G.Chiarello, E.Colavita, R.Memeo,
Physical Review B**29**, 3730 (1984).

35) "Reflection electron-energy-loss investigation of the electronic and structural properties of Palladium"
G.Chiarello, E.Colavita, M.De Crescenzi, S.Nannarone,
Physical Review B**29**, 4878 (1984).

36) "Structural and electronic properties of laser irradiated pure iron"
S.Polizzi, F.Antonangeli, M.Piacentini, M.De Crescenzi,
Solid State Communications **50**, 251 (1984).

37) "Spectroscopie EXAFS, SEXAFS et EELFS: aspects experimentaux et determination des structures de surface"
M.De Crescenzi, I.Davoli,
"Adsorption et Adhesion" ed.M.Bourg, 5eme Ecole d'Eté Mediterraneenne"
Les Editions de Physique, p.239-273 (1984).

38) "Cluster growth of Cu on graphite:Auger,XPS and electron energy loss studies"
M.De Crescenzi, P.Picozzi, S.Santucci, C.Battistoni, G.Mattogno,
Solid State Communications **51**, 811(1984).

39) "Aluminum collective excitations: reflection electron energy loss results"
G.Chiarello, L.S.Caputi, S.Plutino, E.Colavita, M.De Crescenzi, L.Papagno,
Surface Science **146**, 241 (1984).

40) "XANES and EXAFS measurements on Pd2Si: one electron or many body effects?"
M.De Crescenzi,E.Colavita,U.del Pennino,P.Sassaroli,S.Valeri,
C.Rinaldi, L.Sorba,S.Nannarone
"EXAFS and Near Edge Structures III"eds.K.O.Hodgson, B.Hedman,

J.E.Penner-Hahn, Springer Verlag Series Chemical Physics,Berlin 1984, p.23.

41) "Reflection Extended Energy Loss Fine Structures above the Ti L2,3 Edge: a comparison with EXAFS results"
M.De Crescenzi,G.Chiarello,E.Colavita,
"EXAFS and Near Edge Structure III" eds.K.O.Hodgson,B.Hedman,
J.E.Penner-Hahn, Springer Verlag Series Chemical Physiscs, Berlin 1984, p.487.

1985

42) "Xanes and EXAFS investigation of PdSi silicides"
M.De Crescenzi, E.Colavita, U.del Pennino, S.Valeri, P.Sassaroli, L.Sorba,
C.Rinaldi, S.Nannarone,
Physical Review B**32**, 612 (1985).

43) "Vacuum ultraviolet reflectivity of small gold clusters"
P.Picozzi, S.Santucci, M.De Crescenzi, F.Antonangeli, P.Piacentini,
Physical Review B**31**, 4023 (1985).

44) "Extended energy loss fine structures above M2,3 and L2,3 edges of transition metals"
M.De Crescenzi, G.Chiarello,
Journal of Physics C**18**, 3595 (1985).

45) "Vacuum ultraviolet reflectivity of very thin gold films"
P.Picozzi, S.Santucci, M.De Crescenzi, M.Piacentini, F.Antonangeli,
Thin Solid Films **126**, 123 (1985).

46) "Structural and electronic investigations of Cu islands on graphite"
M.De Crescenzi,P.Picozzi,S.Santucci,C.Battistoni,G.Mattogno,
Surface Science **156**, 352 (1985).

47) "Validity of the (Z+1) ion-core approximation for deep and shallow levels as studied by extended energy loss fine structure technique"
E.Châinet,M.De Crescenzi, J.Derrien,
Physical Review B**31**, 7464 (1985).

48) "Extended energy loss fine structure (EELFS): a new structural probe for surface and interface".
M.De Crescenzi,
Surface Science **162**, 838 (1985).
(invited paper at VIIth European Conf.on Solid Surfaces (ECOSS), Aix en Provence, France).

49) "Comparison between EXAFS and SEELFS results above the M2,3 edge of cobalt"
M.Fanfoni, S.Modesti, N.Motta, M.De Crescenzi, R.Rosei,
Physical Review B**32**, 7865 (1985).

50) "Dispersion effects and electron energy loss of silicon surface"
S.D'Addato, S.Nannarone, M.De Crescenzi,
Surface Science **162**, 175 (1985).

1986

51) "Local structure determination of the Co/Si(111) interface by surface electronon energy loss fine structure technique"
E.Châinet, M.De Crescenzi, J.Derrien, T.T.A.Nguyen, R.Cinti,
Surface Science **168**, 801 (1986).

52) "Electron energy loss spectra of Ni silicides: valence collective excitation and structural properties"
M.G.Betti, C.Rinaldi, P.Sassaroli, L.Sorba, S.Nannarone, M.De Crescenzi, U.del Pennino, C.Mariani, S.Valeri,
Surface Science **168**, 204 (1986).

53) "Evidence of extended fine structures in the Auger spectra:a new approach for surface structural studies"
M.De Crescenzi, E.Chainet, J.Derrien,
Solid State Communications **57**, 487 (1986).

54) "Core and valence excitations in Ni2Si"
M.G.Betti, S.Nannarone, M.DeCrescenzi, U.del Pennino, C.Mariani, S.Valeri
Thin Solid Films **140**, 99 (1986).

55) "L2,3 investigation of the unoccupied states in Ni2Si" U.del Pennino, C.Mariani, S.Valeri, G.Ottaviani, M.G.Betti, S.Nannarone, M.De Crescenzi,
Physical Review B**34**, 2875 (1986).

56) "Electronic and structural investigations of palladium clusters by EXAFS and XANES spectroscopy"
M.De Crescenzi, M.Diociaiuti, L.Lozzi, P.Picozzi, S.Santucci,
Physical Review B**34**, 4334 (1986).

57) "Size effects in the Auger lineshape of Cu clusters on graphite"
M.De Crescenzi, M.Diociaiuti, L.Lozzi, P.Picozzi, S.Santucci, C.Battistoni, G.Mattogno,
Surface Science **178**, 282 (1986).

58) "Extended fine structures in the Auger spectra"
E.Chainet, M.De Crescenzi, R.C.Cinti, T.T.A.Nguyen, J.Derrien,
Journal de Physique **47-**C8, 209 (1986).

59) "Structural properties of small copper clusters"
M.Diociaiuti, L.Lozzi, P.Picozzi, S.Santucci, M.De Crescenzi,
Vuoto **16**, 89 (1986).

1987

60) "Empty states investigation of Ni2Si by photon absorption spectroscopy"
M.G.Betti, U.del Pennino, C.Mariani, A.M.Fiorello, M.Pedio, S.Perugini,
S.Nannarone, M.De Crescenzi,
Physica Scripta **35**, 157 (1987).

61) "Structural characterization of surfaces by EELFS spectroscopy"
M.De Crescenzi,
Journal of Vacuum Science and Technology A**5**, 869 (1987).

(invited paper at 6th Internat.Conference on Solid Surfaces (ICSOSS), Baltimora,USA).

62) "Surface electron energy loss fine structure investigation on the local structure of copper clusters on graphite"
M.De Crescenzi, M.Diociaiuti, L.Lozzi, P.Picozzi, S.Santucci,
Physical Review B**35**, 5997 (1987).

63) "Local structure of Ni2Si"
M.G.Betti, S.Nannarone, U.del Pennino, C.Mariani, S.Valeri, M.De Crescenzi,
Journal Electron Spectroscopy and Related Spectroscopies **42**, 287 (1987).

64) "Electron enegy loss investigation of core levels and valence excitations of Pd2Si"
S.Nannarone, A.M.Fiorello, U.del Pennino, C.Mariani, M.G.Betti, M.De Crescenzi,
Journal of Vacuum Science and Technology A**5**, 1474 (1987).

65) "Fine structure in electron energy loss and Auger spectra: applications to the local geometry determination of surface and interface"
J.Derrien, E.Chainet, M.De Crescenzi, C.Noguera,
Surface Science **189**, 628 (1987).
(invited paper at VIIth European Conference on Solid Surfaces (ECOSS), Lucerna, Svizzera)

66) "Local structure of graphite by EELFS spectroscopy: influence of multiple plasmons and orientational dependence"
M.De Crescenzi, M.Diociaiuti, L.Lozzi, P.Picozzi, S.Santucci,
Surface Science **189**, 590 (1987).

67) "Co/Si (111) interface formation at room temperature"
J.Derrien, M.De Crescenzi, E.Chainet, C.d'Anterroches, C.Pirri, G.Gewinner, J.C.Perrucchetti,
Physical Review B**36**, 6681 (1987).

68) "Correlation effects on the L3VV Auger lineshape of Cd1-xMnxTe"
A.Balzarotti, M.De Crescenzi, R.Messi, N.Motta, F.Patella,
Physical Review B**36**, 7428 (1987).

69) "Electronic correlation in YBa2Cu3O7-δ from Auger spectroscopy"
A.Balzarotti, M.De Crescenzi, C.Giovannella , R.Messi , N.Motta, F.Patella, A.Sgarlata,
Physical Review B**36**, 8285 (1987).

1988

70) "Techniques for the electronic and structural investigation of the Cu clusters on graphite"
M.De Crescenzi, M.Diociaiuti, L.Lozzi, P.Picozzi,S.Santucci,
"Elemental and Molecular Clusters"
Proc.13th Int.School of Material Science and Technology, Erice (Italy) 1988, p.96.

71) "Energy Loss study of the electronic structure of YBa2Cu3O7-δ high Tc superconductors"
A.Balzarotti, M.De Crescenzi, N.Motta.F.Patella,A.Sgarlata,
Solid State Communications **68**, 381 (1988).

72) "Cu/Ag (111) interface studied by surface electron energy-loss-fine-structure spectroscopy"
T.Tyliszczak, M.De Crescenzi, A.P.Hitchcock,

Physical Review B**37**, 10664 (1988).

73) "Origin and structural sensitivity of surface Auger extended fine structure"
T.Tyliszczak,A.P.Hitchcock,M. De Crescenzi,
Physical Review B**38**,5768 (1988).

74) "Valence charge fluctuations in YBa2Cu3O7- δ from core level spectroscopies"
A.Balzarotti, M.De Crescenzi,N.Motta,F.Patella,A.Sgarlata,
Physical Review B**38**, 6461 (1988).

1989

75) "Extended fine Auger spectroscopy of Ag and Cu"
M.De Crescenzi, A.P.Hitchcock, T.Tyliszczak,
Physical Review B**39**, 9839 (1989).

76) "Structural determination of crystalline Silicon by extended energy loss fine structure (EELFS) spectroscopy"
M.De Crescenzi, L.Lozzi, P.Picozzi, S.Santucci, M.Benfatto, C.R.Natoli,
Physical Review B**39**, 8409 (1989).

77) "Silicon K edge studied by EELFS spectroscopy in reflection mode: dipole versus multipole terms contributions"
M.De Crescenzi, L.Lozzi, P.Picozzi, S.Santucci, M.Benfatto, C.R.Natoli
Surface Science **211**/**212**, 534 (1989).

78) "Extended energy loss fine structure analysis"
M.De Crescenzi,
CRC, Critical Review on Solid State and Material Sciences, Vol.**15**, pp.279-325 (1989).

79) "Core edge energy loss studies of Pd clusters on graphite"
M.De Crescenzi,L.Lozzi,P.Picozzi,S.Santucci,
Zeitschrift fur Physik D**12**, 417 (1989).

80) "Electronic structure and charge fluctuations in YBa2Cu3O7-δ from EELS,XPS and Auger spectroscopies"
A.Balzarotti, M.De Crescenzi, N.Motta, F.Patella, A.Sgarlata,
International Journal of Modern Physics B**1**, 1135 (1989).

81) "Co/Si (111) interface investigated by bresstrahlung isochromat spectroscopy and X-ray induced spectroscopy"
J.Y.Veuillen,T.T.A.Nguyen, R.Cinti,M.De Crescenzi,J.Derrien,
Physical Review B**39**, 8015 (1989).

82) "Short range local order of the Co/Si (111) interface studied by extended fine Auger structure technique"
J.Y.Veuillen, A.Bensoula,M.De Crescenzi,J.Derrien,
Physical Review B**39**, 10398 (1989).

83) "Core level electron energy loss spectroscopy as a local probe for the electronic structure of the Co/Si (111) interface"

M.De Crescenzi, J.Derrien, E.Chainet, K.Orumchian,
Physical Review B**39**, 5520 (1989).

84) "Temperature and core hole dependence of EXFAS (Extended Fine Auger Structure) of Ag(111) and Cu"
M.De Crescenzi,T.Tyliszczak, A.P.Hitchcock,
"Auger Spectroscopy and Electronic Structure" edito da G.Cubiotti,G.Mondio e K. Wandelt ,
Springer Series in Surface Science, Vol.18, p.243, Springer Verlag Berlin Heidelberg, 1989.

85) "Auger study of the electronic correlations in YBa2Cu3O7-δ"
A.Balzarotti, M.De Crescenzi, N.Motta, F.Patella, A.Sgarlata,
"Auger Spectroscopy and Electronic Structure" edito da G.Cubiotti,G.Mondio e K. Wandelt ,
Springer Series in Surface Science, Vol.18, p.108, Springer Verlag Berlin Heidelberg,1989.

86) "Temperature and core hole dependence of EXFAS (Extended Auger Fine Structure) of Ag (111) and Cu"
M.De Crescenzi, T.Tyliszczak, A.P.Hitchcock,
Physica B**158**, 557 (1989).

87) "The Cu/Ag (111) interface studied by electron energy loss fine structure spectroscopy"
A.P.Hitchcock,M.De Crescenzi, T.Tyliszczak,
Physica B**158**, 666 (1989).

88) "BIS investigation of the Co/Si (111) interface formation"
J.Y.Veuillen,M.De Crescenzi,T.T.A.Nguyen,R.Cinti,J.Derrien,
"Auger Spectroscopy and Electronic Structure" edito da G.Cubiotti,G.Mondio e K.Wandelt,
Springer Series in Surface Science Vol.18, p.258, Springer Verlag Berlin Heidelberg 1989.

89) "Heteroepitaxy of semiconducting and metallic silicides on silicon"
N.Cherieff,R.Cinti,M.De Crescenzi,J.Derrien,T.T.A.Nguyen,J.Y.Veuillen,
Applied Surface Science **41**/**42**, 241 (1989).

90) "Local structural investigation of surfaces and interfaces by EELFS and EXFAS techniques"
M.De Crescenzi
Ultramicroscopy **28**, 65 (1989).

91) "Problems in electron emission spectroscopy"
M.De Crescenzi
Ultramicroscopy **28**, 79 (1989).

92) "Study of laser deposited Bi2Sr2CaCu2O8+ δ thin films by Rutherford backscattering X-ray photoemission and X-ray Auger spectroscopies"
F.Rochet, A.Balzarotti, M.De Crescenzi,N.Motta, Muraly Sastry, F.Patella, J.Perriere, F.Kerherve,G.Hauchecorne,
Journal of Less Common Metals **151**, 13 (1989).

93) "Study of the valence charge fluctuations in laser-deposited Bi2Sr2CaCu2O8+δ thin films by X-ray photoemission and X-ray Auger spectroscopies".
F.Rochet, A.Balzarotti, M.De Crescenzi, N.Motta, Muraly Sastry, F.Patella, J.Perriere, F.Kerherve, G.Hauchecorne,
Physica C **159**, 447 (1989).

94) "EXAFS-like structural measurements with slow energy electrons"
M.De Crescenzi,
in "Highlights on spectroscopies of semiconductors and insulators" edito da A.Balzarotti, G.Guizzetti, A.Stella, World Scientific,Singapore 1989, pp.434-465.

1990

95) "Palladium clusters on graphite: a Bremsstrahlung Isochromat Spectroscopy study"
M.De Crescenzi, F.Patella,N.Motta,M.Sastry,F.Rochet,R.Pasquali,A.Balzarotti,
Solid State Communications **73**, 251 (1990).

96) "Investigation on electronic structure of Cu clusters on graphite by EELS and XPS studies"
M.De Crescenzi,M.Diociaiuti,L.Lozzi,P.Picozzi,S.Santucci,
Solid State Communications **74**, 115 (1990).

97) "Palladium clusters on graphite: evidence of resonant hybrid states in the valence and conduction bands"
M.Cini, M.De Crescenzi, F.Patella, N.Motta, M.Sastry, F.Rochet, R.Pasquali, A.Balzarotti, C.Verdozzi,
Physical Review B**41**, 5685 (1990).

98) "A structural investigation on evaporated small clusters of Cr by surface electron energy loss fine structure spectroscopy"
M.De Crescenzi, R.Diamanti, L.Lozzi, M.Passacantando, P.Picozzi, S.Santucci,
Vacuum **41**, 356 (1990).

99) "Short range order investigation by low energy electrons"
M.De Crescenzi, J.Derrien,L.Lozzi,P.Picozzi,S.Santucci,
Surface and Interface Analysis **16**, 111 (1990).
(invited paper at ECASIA 89 (European Conference on Application of Surface and Interface Analysis, Antibes, France).

100) "BIS and XPS investigation of the electronic structure of β-FeSi2 and Fe/Si(111) interface"
M.De Crescenzi,G.Gaggiotti,N.Motta,F.Patella,A.Balzarotti,J.Derrien,
Physical Review B**42**, 5871 (1990).

101) "Extended Fine Auger Structure investigation of discontinuous chromium films"
M.De Crescenzi, L.Lozzi, M.Passacantando, P.Picozzi, S.Santucci,
Thin Solid Films **193**/**194**, 318 (1990).

102) "Structural study of thin films by extended energy loss fine structure spectroscopy"
M.De Crescenzi, N.Motta, L.Lozzi, M.Passacantando, P.Picozzi, S.Santucci,
Thin Solid Films **193**/**194**, 289 (1990).
(invited paper at 8th International Conference on Thin Films, San Diego (USA)).

1991

103) "MgO(100) structural investigation using EELFS and EXFAS techniques"
M.De Crescenzi, N.Motta, F.Patella,A.Sgarlata,A.Balzarotti,M.Benfatto,C.R.Natoli,

"The Structure of Surfaces III" Springer Verlag Series in Surface Sciences edito da S.Y.Tong,M.A. Van Hove, Springer-Verlag Heidelberg, Berlin, New York ,1991.

104) "Study of the Co/Si(111) interface formation using electron energy loss spectroscopy"
A.Bensaoula, J.Y.Veuillen,T.A.Nguyen Tan, J.Derrien,M.De Crescenzi,
Surface Science **241**, 425 (1991).

105) "A core level electron energy loss study of the Pd / Si (111) 2x1 interface formation"
S.Turchini, A.M.Fiorello, S.Nannarone, P.Picozzi, S.Santucci, L.Lozzi, M.De Crescenzi,
M.G.Betti, C.Mariani, U.del Pennino,
Il Nuovo Cimento D**13**, 203 (1991).

106) "Electronic Structure of Cr clusters on graphite"
L.Lozzi, M.Passacantando, P,Picozzi, S.Santucci, M.De Crescenzi,
Zeitschrift fur Physik D**20**, 390 (1991).

107) "Structural investigation of Cr/Si interface"
L.Lozzi, M.Passacantando, P.Picozzi, S.Santucci, M.De Crescenzi,
Surface Science **251**/**252**, 579 (1991).

108) "Electronic structure of epitaxial β-FeSi2 on Si (111)"
M.De Crescenzi, G.Gaggiotti, N.Motta, F.Patella, A.Balzarotti, G.Mattogno, J.Derrien,
Surface Science **251**/**252**, 175 (1991).

109) "Core level changes induced by oxygen in YBa2Cu3O7-δ"
A.Balzarotti, F.Patella, M.De Crescenzi, N.Motta, A.Sgarlata, F.Licci,
Physical Review B**43**, 351 (1991).

110) "X-ray photoemission spectroscopy study of the surface deterioration of Bi2Sr2CaCu2O8 and Bi1.7Pb0.3Sr2CaCu2O8 single crystal at 20 K"
A.Balzarotti, M.De Crescenzi, N.Motta, F.Patella, A.Sgarlata, P.Paroli, G.Balestrino, M.Marinelli,
Physical Review B**43**, 11500 (1991).

111) "Interface formation between d metal and the Bi2Sr2CaCu2O8 surface"
A.Balzarotti, F.Patella, F.Arciprete, N.Motta, A.Sgarlata, M.De Crescenzi,
Physica C **180**, 101 (1991).

112) "EELFS investigation of YBa2Cu3O7-δ thin films and sintered samples"
F.Arciprete, A.Balzarotti, N.Motta, F.Patella, A.Sgarlata, M.De Crescenzi,
Physica C **180**, 132 (1991).

1992

113) "Structural and electronic studies of clean and oxidized thin Fe films on polycrystalline copper"
S.Di Nardo, M.Passacantando, P.Picozzi, S.Santucci, L.Lozzi, M.De Crescenzi, H.P.den Daas
Surface and Interface Analysis **18**, 98 (1992).

114) "Extended Energy Loss Fine Structure technique: an analytical tool for surface and bulk characterization"
M.De Crescenzi, I.Davoli, L.Lozzi, M.Passacantando, S.Santucci, P.Picozzi,

Vacuum **43**,393 (1992)
(invited paper at 3th European Vacuum Conference,Vienna, Austria).

115) "Extended Electron-Energy-Loss Fine Structure (EXELFS) and Selected Area Electron Diffraction (SAED) studies of small palladium clusters"
M.Diociaiuti, P.Picozzi, S.Santucci, L.Lozzi, M.De Crescenzi,
Journal of Microscopy **152**, 340 (1992).

116) "Extended Energy Loss Fine Structure and X-Ray Photoelectron Spectroscopy studies of clean and oxidized Fe thin films on polycrystalline Cu"
S.Di Nardo, M.Passacantando, P.Picozzi, S.Santucci, L.Lozzi, M.De Crescenzi, H.P.den Daas
Surface and Interface Analysis **19**, 478 (1992).

117) "Reactivity of the Bi2Sr2CaCu2O8 and Bi1.7Pb0.3Sr2CaCu2O8 for d-metal overlayers"
A.Balzarotti, F.Patella, F.Arciprete, N.Motta, A.Sgarlata, M.De Crescenzi,
Physica C **196**, 79 (1992).

118) "$L_{2,3}$ edges of chromium: comparison between electron energy loss spectra in transmission and reflection mode"
L.Lozzi, M.Passacantando, P.Picozzi, S.Santucci, M.Diociaiuti, M.De Crescenzi
Solid State Communications **83**, 921 (1992).

119) "Etch pits and tunnel barrier in chemical etched YBa2Cu3O7 crystals by scanning tunneling microscopy"
A.Balzarotti, F.Patella, N.Motta, A.Cucolo, R.Di Leo, M.De Crescenzi.
Physica C **200**, 251 (1992).

1993

120) "Iron disilicide growth on Si (111): a scanning tunneling microscopy investigation"
N.Motta, A.Sgarlata, G.Gaggiotti, A.Balzarotti, F.Patella, M.De Crescenzi.
Surface Science **284**, 257 (1993).

121)"Topographic and spectroscopic analysis of ethylene adsorption on Si (111) 7x7 STM and STS"
M.N.Piancastelli, N.Motta, A.Sgarlata, A.Balzaroti, M.De Crescenzi.
Physical Review B **48**, 17892 (1993).

122) "Angular dependence of the oxygen K edge fine structure in electron energy loss spectra of Bi1.7Pb0.3Sr2CaCu2O8"
A.Balzarotti, F.Arciprete, S.Colonna, M.Diociaiuti, F.Patella, M.De Crescenzi,
Physica C **218**, 301 (1993).

123) "Extended Fine Auger structure investigation of discontinuous copper films deposited on graphite"
S.Di Nardo, L.Lozzi, M.Passacantando, P.Picozzi, S.Santucci, M.De Crescenzi,
Surface Science **287**/**288**, 1097 (1993).

124) "XPS, AES and EELS studies of Cr clusters on graphite"
L.Lozzi, P.Picozzi, S.Santucci, M.De Crescenzi,
Zeitschrift für Physik D**26**, 51 (1993).

1994

125) "Evidence of KL double electron excitations in X-ray photoemission spectra of solids: the case of MgO and MgF2"
A.Di Cicco, M.De Crescenzi, R.Bernardini, G.Mancini.
Physical Review B **49**, 2226 (1994).

126) "Angular dependence of the EXFAS in MgO(100) surfaces: short range order versus diffraction effects"
I.Davoli, R.Bernardini, C.Battistoni, P.Castrucci, R.Gunnella, M.De Crescenzi.
Surface Science **306**, 144 (1994).

127) "UPS and XPS studies of Cu clusters on graphite"
S.Di Nardo, L.Lozzi, M.Passacantando, P.Picozzi, S.Santucci,M.De Crescenzi.
Surface Science **307-309**, 922 (1994).

128) "EXAFS-like oscillations in the X-ray excited autoionization spectra assisted by Compton process"
L.Lozzi, M.Passacantando,P.Picozzi,S.Santucci,M.De Crescenzi.
Solid State Communications **90**, 831 (1994).

129) "Thermal studies of bulk copper surface by Extended Fine Auger Structure spectroscopy"
L.Lozzi, M.Passacantando, P.Picozzi, S.Santucci, M.De Crescenzi.
"The Structure of Surfaces IV" Proc.of the IV International Conf.on the Structure of Suraces,Shanghai,China August 1993, edited by Xide Xie, S.Y.Tong and M.A.Van Hove, World Scientific, Singapore 1994.

130) "Copper phtalocyanine on S i(111)-7x7 and Si(100)-2x1 surfaces: an XPS/AES and STM study"
F.Rochet, G.Dufour, H.Roulet, N.Motta, A.Sgarlata, M.N.Piancastelli, M.De Crescenzi.
Surface Science **319**, 10 (1994).

131) "Copper phtalocyanine on Si (111)-7x7 and Si(100)-2x1 surfaces: an X-ray photoemission spectroscopy and synchrotron X-ray absorption spectroscopy study"
G.Dufour, A.Poncey, F.Rochet, H.Roulet, M.Sacchi, M.De Santis, M.De Crescenzi.
Surface Science **319**, 251 (1994).

1995

132) "Auger electron diffraction of Si (111) L2,3 transition: role of the 7x7 surface reconstruction and Ge/Si interface formation"
M.De Crescenzi, R.Gunnella, R.Bernardini, M.De Marco, I.Davoli.
Physical Review B**52**, 1806 (1995).

133) "Surface structural measurements by low energy backscattered electrons"
M.De Crescenzi
Surface Science Reports **21**, 89-176 (1995).

134) "Local Structure of Diamonds films: Auger and EELFS investigation"
M.L.Terranova, V.Sessa, R.Bernardini, I.Davoli, M.De Crescenzi.

Surface Science **331**, 1050 (1995).

135) "EXFAS studies on the thermal behaviour of copper surfaces"
L.Lozzi, M.Passacantando, P.Picozzi, S.Santucci, M.De Crescenzi.
Journal of Electron Spectroscopy and Related Phenomena **72**, 223 (1995).

136) "Structural surface investigation with low energy backscattered electrons"
M.De Crescenzi, R.Gunnella, I.Davoli
Journal of Electron Spectroscopy and Related Phenomena **76**, 29 (1995).

137) "Incident beam effects in AED (Auger Electron Diffraction): the case of Cu (100)"
I.Davoli, R.Gunnella, R.Bernardini, M.De Crescenzi.
Journal of Electron Spectroscopy and Related Phenomena **76**,493 (1995).

138) "EELFS and EXFAS electron spectroscopies: a combined structural investigation"
L.Lozzi, M.Passacantando, P.Picozzi, S.Santucci, M.De Crescenzi.
Surface Review and Letters **2**, 255 (1995).

139) "Matal Phtalocyanine on Cu (001) and Si(001) surface studied by XPS and STM"
G.Dufour, C.Pocey, F.Rochet, H.Roulet, S.Iacobucci, M.Sacchi, F.Yubero, N.Motta,
M.N.Piancastelli, A.Sgarlata, M.De Crescenzi.
Journal of Electron Spectroscopy and Related Phenomena **76**, 219 (1995).

140) "Inelastic processes versus diffraction effects and polar angle energy loss spectra of the graphite K edge" R.Gunnella, I.Davoli, R.Bernardini, M.De Crescenzi,
Physical Review B **52**, 17091 (1995).

1996

141) "STM studies of Ge-Si thin layers epitaxially grown on Si(111)"
N.Motta, A.Sgarlata, M.De Crescenzi, J.Derrien,
Applied Surface Science **102**, 57 (1996).

142) " Interface ordering in Sim/Gen monolayer superlattices: a photoluminescence study"
M.Casalboni, N.Pinto, B.Izzi, I.Davoli, M.De Crescenzi, F.De Matteis, P.Prosposito,
R.Pizzoferrato.
Physical Review B **53**, 1030 (1996).

143) "XPD study of atomic intermixing at the Ge/Si (001) interface"
I.Davoli, R.Gunnella, P.Castrucci, N.Pinto, R.Bernardini, M.De Crescenzi.
Applied Surface Science **102**, 102 (1996).

144) "Influence of non-dipolar terms on the Cu L2,3 and M2,3 electron energy loss fine structure (EEELFS) spectra in transmission and reflection mode"
M.Diociaiuti, L.Lozzi, M.Passacantando, P.Picozzi, S.Santucci, M.De Crescenzi.
Journal of Electron Spectroscopy and Related Phenomena **82**, 1 (1996).

145) "X-ray photoelectron diffraction study of intermixing and morphology at the Ge/Si(100) interface"
R.Gunnella, P.Castrucci, I.Davoli, N.Pinto, D.Sebilleau, M.De Crescenzi.
Physical Review B **54**, 8882 (1996).

146) "Electron Scattering and Related Spectroscopies"
M.De Crescenzi, M.N.Piancastelli,
World Scientific Publishing 1996, Singapore, New York, pp-1-416.

1997

147) "Comparison of the dielectric structure of AlPd and Al70Pd20Mn10 by XPS and EELS"
M.Zurkirch, M.De Crescenzi, M.Erbudak, M.Hochstrasser, A.R.Kortan
Physical Review B **55**, 8808 (1997).

148) "Comparison of the dielectric function of Al, Al3Pd and Al70Pd20Mn10 determined by electron-energy-loss measurements"
M.Zurkirch, M.De Crescenzi, M.Erbudak, A.R.Kortan,
Physical Review B**56**, 10651 (1997).

149) "SiC formation by reaction of Si (100) with acetylene: electronic and growth mode"
G.Dufour, F.Rochet, F.C.Stedile, Ch.Poncey, M.De Crescenzi, R.Gunnella, M.Froment,
Physical Review B **56**, 4266 (1997).

150) "Perpendicular and in-plane magnetic anisotropy in epitaxial Cu/Ni/Cu/Si(111) ultrathin films"
G.Gubbiotti, G.Carlotti, G.Socino, F.D'Orazio, F.Lucari, M.De Crescenzi,
Physical Review B**56**, 11073 (1997).

151) " Low kinetic energy AED: a tool for the study of Ge epitaxial layers grown on Sb-terminated Si (111) surface"
I.Davoli, R.Gunnella, R.Bernardini, M.De Crescenzi,
Journal of Electron Spectroscopy and Related Phenomena **83**, 137 (1997).

152) "Extended Fine-Structure in Secondary Backscattered Electrons"
M.De Crescenzi, S.Colonna, R.Gunnella, M.Fanfoni
Progress in Surface Science **53**, 253 (1997).

153) "XPD study of atomic intermixing at the Ge/Si (001) surface"
R.Gunnella, P.Castrucci, I.Davoli, N.Pinto, D.Sebilleau, M.De Crescenzi.
Surface Review and Letters **4**, 255 (1997).

1998

154) "Evidence for the suppression of incident beam effects in Auger electron diffraction"
I.Davoli, R.Gunnella, R.Bernardini, M.De Crescenzi
Surface Science **396**, 221 (1998).

155) "Magnetic anisotropy in epitaxial Cu/Ni/Cu/Si (111) ultrathin films studied by magneto-optical Kerr effect and Brillouin spectroscopy"
G.Gubbiotti, G.Carlotti, F.D'Orazio, F.Lucari, R.Bernadini, M.De Crescenzi
Journal of Magnetism and Magnetic Materials **177**, 1259 (1998).

156) "Growth of Ge/Si (111) epitaxial layers: intermixing, strain relaxation and islands formation"
N.Motta, A.Sgarlata, R.Calarco, Q.Nguyen, J.Castro Cal, F.Patella, A.Balzarotti, M.De Crescenzi
Surface Science **406**, 254 (1998).

157) "Scanning tunneling microscopy studies of Ge/Si films on Si (111): from layer by layer to quantum dots"
N.Motta, A.Sgarlata, R.Calarco, Q.Nguyen, J.Castro Cal, P.Prosposito, A.Balzarotti, M.De Crescenzi
Journal of Vacuum Science and Technology B **16**, 1555 (1998).

158) "Surfactant-madiated growth of Ge/Si (100) interface studied by XPD"
R.Gunnella, P.Castrucci, I.Davoli, N.Pinto, P.Cucculelli, D.Sebilleau, M.De Crescenzi
Surface Review and Letters **5**, 157 (1998).

159) "X-ray absorption at Ge L3 edges as tool to investigate Ge/Si(001) interface and heterostructures"
P.Castrucci, R.Gunnella, M.De Crescenzi, M.Sacchi, G.Dufour, F.Rochet
Journal of Vacuum Science and Technology B **16**, 1616 (1998).

160) "Acetylene gas as carbon source: an X-ray photoemission spectroscopy and near-edge x-ray absorption fine structure spectroscopy study of its stability on Si (111) 7x7"
F.Rochet, G.Dufour, F.C.Stedile, F.Sirotti, P.Prieto, M.De Crescenzi
Journal of Vacuum Science and Technology B **16**, 1692 (1998).

161) "Exchange mechanisms at Ge/Si (100) interface from a multiple-scattering analysis of the Ge L3 absorption edge"
P.Castrucci, R.Gunnella, M.De Crescenzi, M.Sacchi, G.Dufour, F.Rochet
Physical Review B **58**, 2132 (1998).

162) "Evidence of ordered phase of Ge-Si heterostructures by X-ray absorption spectroscopy at Ge L3 edge"
P.Castrucci, R.Gunnella, N.Pinto, M.De Crescenzi, M.Sacchi, G.Dufour, F.Rochet
Surface Science **416**, 466 (1998).

163) "Local structural investigation of silicon surfaces by electron scattering"
M.De Crescenzi, R.Gunnella, P.Castrucci, I.Davoli
Il Nuovo Cimento **20**, 991 (1998).

1999

164) "Double magnetization reorientation in epitaxial Cu/Ni/Cu/Si(111) ultra-thin films"
G.Gubbiotti, L.Albini, G.Carlotti, G.Socino, S.Fusari, M.De Crescenzi
Surface Science **433**, 685 (1999).

165) "fcc-bcc phase transition of epitaxial Fe/Cu(111) films: a structural and magnetic study"
G.Gubbiotti, L.Albini, G.Carlotti, S.Loreti, C.Minarini, M.De Crescenzi
Surface Science **433**, 680 (1999).

166) "Temperature dependence of magnetic properties in epitaxial Cu/Ni/Cu/Si(111) measured by magneto-optical Kerr effect"
F.D'Orazio, F.Lucari, G.Gubbiotti, G.Carlotti, M.De Crescenzi
Journal of Magnetism and Magnetic Materials **198**, 369 (1999).

167) "Short period (Si6Ge4) superlattices: photoluminescence and electron microscopy study"
N.Pinto, F.Tombolini, R.Murri, M.De Crescenzi, M.Casalboni, G.Barucca, G.Majni

Journal of Luminescence **80**, 509 (1999).

168) Si(1-x)C(x) formation by reaction of Si(111) with acetylene: growth mode, electronic, structure and luminescence investigation"
M.De Crescenzi, M.Marucci, R.Gunnella, P.Castrucci, M.Casalboni, G.Dufour, F.Rochet
Surface Science **426**, 277 (1999).

169) "Photoluminescence investigation of short period silicon-germanium heterostructures grown using molecular beam epitaxy"
N.Pinto, F.Tombolini, R.Murri, M.De Crescenzi, M.Casalboni, G.Barucca, G.Majni
Surface Science **43**, 145 (1999).

170) "Electronic density of empty states of Ge/Si(111) epitaxial layers: theory and experiment"
P.Castrucci, R.Gunnella, M.De Crescenzi, M.Sacchi, G.Dufour, F.Rochet
Physical Review B **60**, 5759 (1999).

171) "Structural and magnetic properties of epitaxial Cu/Fe/Cu/Si (111) ultrathin films"
G.Gubbiotti, L.Albini, S.Tacchi, G.Carlotti, R.Gunnella, M.De Crescenzi
Physical Review B **60**, 17150 (1999).

2000

172) "Finite size effects in patterned magnetic permalloy films"
G. Gubbiotti, L. Albini, G. Carlotti, M. De Crescenzi, E. Di Fabrizio, M. Gentili, O. Donzelli, F. Nizzoli, H. Koo, and R. D. Gomez,
Journal of Applied Physics **87**, 5633 (2000).

173) "Brillouin light scattering study in ferromagnetically coupled Cu/Fe (110)/Cu/ Fe(110)/Cu/Si(111) heterostructure: bilinear exchange magnetic couplings"
G.Gubbiotti, G.Carlotti, A.Montecchiari, M.De Crescenzi, R.Zivieri, L.Giovannini, F.Nizzoli,
Physical Review B **62**, 16109 (2000).

174) "Metal-Metal Epitaxy on Silicon: Cu/Ni/Cu Ultrathin Films on 7x7-Si(111)",
G. Gubbiotti, G. Carlotti, S. Loreti, C. Minarini, R. Gunnella, M. De Crescenzi,
Surface Science **449**, 218 (2000).

175) "Magnetization reorientation in Ni (111) ultrathin films studied by low-temperature hysteresis measurements",
G. Gubbiotti, G. Carlotti, F. D'Orazio, F. Lucari, and M. De Crescenzi,
Physica B **275**, 65 (2000).

176) "Near edge x-ray absorption and x-ray photoelectron diffraction studies of the structural environment of Ge-Si systems"
P.Castrucci, R.Gunnella, R.Bernardini, M.De Crescenzi,
Surface Review and Letters **7**, 307 (2000).

177) "Perpendicular magnetization in epitaxial Cu/Fe/Cu/Si(111) ultrathin films
G.Gubbiotti, G.Carlotti, F.D'Orazio, F.Lucari, R.Gunnella, M.De Crescenzi,
Surface Science **454**, 891 (2000).

178) “Interaction of acetylene on Si (111): growth and luminescence study of Si(1-x)C(x) thin layers”
M.De Crescenzi, R.Bernardini, R.Gunnella, P.Castrucci, M.Casalboni, R.Pizzoferrato, G.Dufour, F.Rochet,
Philosophical Magazine B**80**, 669 (2000).

2001

179) "Electronic state and magnetism of ultrathin Fe/Cu/Si (111) films"
P.Castrucci, R.Gunnella, R.Bernardini, M.De crescenzi, L.Ferrari, C.Crotti, C.Comiccioli, C.Ottaviani, G.Gubbiotti, G.Carlotti,
Surface Science **476**, 43 (2001).

180) "Interlayer exchange coupling in asymmetry Fe (110)/Cu/Fe (110) thin films studied by Brillouin light scattering"
G.Gubbiotti, L.Albini, G.Carlotti, A.Montecchiari, M.De Crescenzi, R.Zivieri, L.Giovannini, F.Nizzoli,
Surface Science **482**, 970 (2001).

181) "Epitaxy of Fe/Cu/Si (111) ultrathin films: an Auger electron diffraction study"
P.Castrucci, R.Gunnella, R.Bernardini, R.Carboni, M.De Crescenzi
Surface Science **482**, 916 (2001).

182) "Nanostructured layers of c-SiC grown by reaction of Si (111) with acetylene"
M.De Crescenzi, R.Gunnella, S.Pollano, R.Bernardini, P.Castrucci,
Il Nuovo Cimento D **20**, 991-998 (2001).

183) “X-ray resonant scattering of Fe/Cu/Si (111) heterostructures”
M.Sacchi, C.Hague, R.Gunnella, P.Castrucci, M.De Crescenzi
Physical Review B**64**, 012403 (2001).

184) “Brillouin scattering cross section in Fe(110)/Cu(111)/Fe(110) asymmetric bilayers”
R. Zivieri, L. Giovannini, F. Nizzoli, G. Carlotti, G. Gubbiotti, and M. De Crescenzi
Journal of Applied Physics **89**, 7077 (2001).

185) “Acetylene on Si(111): carbon incorporation in the growth of c-SiC thin layer”
M.De Crescenzi, R.Bernardini, S.Pollano, R.Gunnella, P.Castrucci, G.Dufour, F.Rochet,
Surface Science **489**, 185 (2001).

2002

186) "Structural and electronic characterization of Si(100) surface after acetylene interaction"
M.De Crescenzi, R.Bernardini, R.Gunnella, P.Castrucci, R.Pizzoferrato, M.Casalboni,
Surface Science **518**, 1921 (2002).

187) "Structural and photoluminescence properties of Ge-Si ultra-thin films and heterostructures"
P.Castrucci, R.Gunnella, N.Pinto, M.De Crescenzi
Journal of Physics **14**, 8333 (2002).

188) "Structure and morphology of c-SiC films obtained by acetylene reaction with Si(111) surface"

M.De Crescenzi, R.Bernardini, R.Gunnella, P.Castrucci,
Solid State Communications **123**, 27 (2002).

189) "The effect of Sb surfactant on the growth of (Ge/Si)p layers on Si(001): a reflexafs study"
F.d'Acapito, P.Castrucci, N.Pinto, R.Gunnella, M.De Crescenzi, I.Davoli,
Surface Science **518**, 183 (2002).

190) "In situ X-ray absorption measurements of the Cu/MgO(001) interface"
S.Colonna, F.Arciprete, A.Balzarotti, M.Fanfoni, M.De Crescenzi, S.Mobilio
Surface Science **512**, L341 (2002).

191) "Magnetic Force Microscopy study of perpendicular magnetic reorientation for Fe grown on Cu/Si(111)"
P.Castrucci, R.Gunnella, R.Bernardini, P.Falcioni, M.De Crescenzi
Physical Review B **65**, 235435 (2002).

2003

192) "STM study of acetylene reaction with Si(111): observation of a carbon-induced Si(111) sqrt(3)xsqrt(3) R30' reconstruction"
P.Castrucci, A.Sgarlata, M.Scarselli, M.De Crescenzi
Surface Science **531**, L329 (2003).

2004

193) "Effect of the silicon surface step on the acetylene reactionwith the Si(111)7x7 reconstructed surface" M. Scarselli, Paola Castrucci, M.N. Piancastelli, M. De Crescenzi
Surface Science **566-568**, 155-159 (2004).

194) "Scanning tunneling microscopy observation of coiled aluminum nitride nanotubes"
C. Balasubramanian, S. Bellucci, P. Castrucci, M. De Crescenzi, S.V.Bhoraskar
Chemical Physics Letters **383**, 188 (2004).

195) "STM study of Si (111)7 x 7 reconstructed surface carbonization induced by acetylene" M. Scarselli, P. Castrucci, P.D. Szkutnik, A. Sgarlata, M. De Crescenzi
Surface Science **559**, 223 (2004).

196) "Carbon induced restructuring of the Si(111) surface" C. A. Pignedoli, A. Catellani, P. Castrucci, A. Sgarlata, M. Scarselli, M.De Crescenzi, C. M. Bertoni
Physical Review **69**, 113313 (2004).

197) "Effect of coiling on the electronic properties along single-wall carbon nanotubes" P. Castrucci, M. Scarselli, M. De Crescenzi, M. A. El Khakani, F. Rosei, N. Braidy, J.-H. Yi,
Applied Physics Letters **85**, 3857 (2004).
(Paper selected to appear on "Virtual Journal of Nanoscale Science & Technology", Volume 10, issue 20 (2004) (http://www.vjnano.org)

198) "Composition of GeSi islands in the growth of Ge on Si(111)", F. Ratto, F. Rosei, A. Locatelli, S. Cherifi, S. Fontana, S. Heun, D.Szkutnik, A. Sgarlata, M. De Crescenzi, N. Motta,
Applied Physics Letters **84**, 4526 (2004).

199) "Magnetic properties of rectangular permalloy prisms: a combined magnetic force microscopy and magneto-optic Kerr study" P.Castrucci, R.Gunnella, P.Candeloro, E.Di Fabrizio, M.Conti, G.Carlotti, G.Gubbiotti, M.Scarselli, M.De Crescenzi Surface Science **566-568**, 291 (2004).

200) "Magnetic properties of thin MnGe films investigated by magnetic force microscopy" P.Castrucci, N.Pinto, L.Morresi, R.Gunnella, R.Murri, M.Scarselli, M.De Crescenzi Journal of Magnetism and Magnetic Materials **272-276**, 1541 (2004).

2005

201) "Composition of Ge (Si) islands in the growth of Ge on Si(111) by x-ray spectromicroscopy" F. Ratto, F. Rosei, A. Locatelli, S. Cherifi, S. Fontana, S. Heun, P.-D. Szkutnik, A. Sgarlata, M. De Crescenzi, N. Motta, Journal of Applied Physics **97**, 043516 (2005).

202) "Experimental images of silicon nanotubes"
M.De Crescenzi, P.Castrucci, M.Scarselli, M.Diociaiuti, P.S.Chaudari, C.Balasubramanian, T.M.Bhave, S.V.Bhoraskar
Applied Physics Letters **86**, 231901 (2005).
(paper selected to appear on "Virtual Journal of Nanoscale Science & Technology" (2005) http://www.vjnano.org)

203) "Packing-induced electronic structure changes in bundled single-wall carbon nanotubes" P.Castrucci, M.Scarselli, M.De Crescenzi, M.Diociaiuti, P.Chistolini, M.A.El Khakani, F. Rosei, Applied Physics Letters **87**, 103106 (2005).
(paper selected to appear on Virtual Journal of Nanoscale Science & Technology, Volume 12, Issue 11 (2005) http://www.vjnano.org).

204) "XPS and STM study of SiC synthesized by acetylene and disilane reaction with the Si(100) 2x1 surface"
A.Santoni, R.Frycek, P.Castrucci, M.Scarselli, M.De Crescenzi (2005)
Surface Science **582**, 125 (2005).

2006

205) "Densely-packed self-assembled monolayers on gold surfaces from a conformationally constrained helical hexapeptide ", M. Venanzi, G. Pace, A. Palleschi, L. Stella, P. Castrucci, M.Scarselli, M. De Crescenzi, F Formaggio, C.Toniolo, G. Marletta
Surface Science **600**, 409 (2006).

206) "Silicon nanotubes: synthesis and characterization"
P. Castrucci, M. Scarselli , M. De Crescenzi , M. Diociaiuti , Prajakta S. Chaudhari, C. Balasubramanian, Tejashree M. Bhave , S.V. Bhoraskar,
Thin Solid Films **508**, 226 (2006).

207) "Static and dynamic features of a helical hexapeptide chemisorbed on a gold surface"
G. Pace, M. Venanzi , P. Castrucci, M. Scarselli, M. De Crescenzi, A. Palleschi, L. Stella, F. Formaggio,C. Toniolo , G. Marletta
Materials Science and Engineering C **26**, 918 (2006)

208) Growth of ultrahigh-density quantum confined germanium dots on SiO2 thin films"

I. Berbezier, A. Karmous, and A. Ronda, A. Sgarlata, A. Balzarotti, P. Castrucci, M. Scarselli, M. De Crescenzi
Applied Physics Letters **89**, 063122 (2006).
(paper selected to appear on Virtual Journal of Nanoscale Science & Technology, Volume 14, issue 9, (2006) http://www.vjnano.org)

209) "Formation and ordering of Ge nanocrystals on SiO2 using FIB nanolithography"
I. Berbezier, A. Karmous, P.D. Szkutnik, A. Ronda, A. Sgarlata, A. Balzarotti, P. Castrucci, M. Scarselli, M. De Crescenzi
Materials Science in Semiconductor Processing **9**, 812 (2006)

210) "Large photocurrent generation in multiwall carbon nanotubes"
P. Castrucci, F. Tombolini, M. Scarselli, E. Speiser, S. Del Gobbo, W. Richter,
M. De Crescenzi, M. Diociaiuti, E. Gatto and M. Venanzi
Applied Physics Letters **89**, 253107 (2006).
(paper selected to appear on Virtual Journal of Nanoscale Science & Technology, Volume 15, issue 1, (2007) http://www.vjnano.org)

2007

211) "Anharmonicity in single-wall carbon nanotubes as evidenced by means of extended energy loss fine structure spectroscopy analysis"
P. Castrucci, F. Tombolini, M. Scarselli, S. Bini, M. De Crescenzi,. Diociaiuti, S. Casciardi,
M. A. El Khakani, F. Rosei,
Physical Review B **75**, 035420 (2007).
(paper selected to appear on Virtual Journal of Nanoscale Science & Technology, (2007) http://www.vjnano.org)

212) "Visible and near ultraviolet photocurrent generation in carbon nanotubes"
M. De Crescenzi, P. Castrucci, F. Tombolini, M. Scarselli, E. Speiser, S. Del Gobbo, W. Richter,
M. Diociaiuti, E. Gatto and M. Venanzi,
Surface Science **601**, 2810 (2007).

213) "A combined scanning tunneling microscopy and reflectance anisotropy spectroscopy investigation of tetraphenynilporphyrin deposited on graphite"
M.Scarselli, E.Ercolani, P.Castrucci, D.Monti, G.Bussetti, C.Goletti, P.Chiaradia, R.Paolesse, M.De Crescenzi,
Surface Science **601**, 2607 (2007).

214) "Study of absorption of tetraphenynil porphyrin on graphite"
M.Scarselli, P.Castrucci, D.Monti, M.DeCrescenzi,
Surface Science **601**, 5526 (2007).

215) "Optoelectronic properties in quantum-confined germanium dots",
M.Scarselli, S. Masala, P. Castrucci, M. De Crescenzi, E. Gatto M. Venanzi, A. Karmous, P. D. Szkutnik, A. Ronda, I. Berbezier,
Applied Physics Letters **91**, 141117 (2007).
(paper selected to appear on Virtual Journal of Nanoscale Science & Technology, (2007) http://www.vjnano.org)

216) "Electronic correlations in graphite and carbon nanotubes from Auger spectroscopy"

E. Perfetto, M. Cini, S. Ugenti, P. Castrucci, M. Scarselli, M. De Crescenzi, F. Rosei, M. A. El Khakani,
Physical Review B **76**, 233408 (2007).
(paper selected to appear on Virtual Journal of Nanoscale Science & Technology, (2007) http://www.vjnano.org)

2008

217) "Experimental and theoretical study of electronic correlations in carbon nanotubes and graphite from Auger spectroscopy"
E. Perfetto, M. Cini, S. Ugenti, P. Castrucci, M. Scarselli, M. De Crescenzi, F. Rosei, M. A. El Khakani,
Journal of Physics, Conference Series, **100**, 052082(2008).

218) "Photocurrent generation from Ge nanodots in the near UV and visible region"
M.De Crescenzi, M.Scarselli, A.Sgarlata, S.Masala, P.Castrucci, E.Gatto,
M.Venanzi, A.Karmous, A.Ronda, P.D. Szkutnik, I.Berbezier
Superlattices and Microstructures **44**, 331-336 (2008).

2009

219) "Comparison of the local order in Highly Oriented Pyrolitic Graphite and bundles of single-wall carbon nanotubes by nanoscale extended energy loss spectra", P. Castrucci, F. Tombolini, M. Scarselli, C. Scilletta, M.De Crescenzi, M. Diociaiuti, S. Casciardi, F. Rosei, M.Ali El Khakani,
Journal of Physical Chemistry C **113**, 4848-4855 (2009).

220) "Multi-wall carbon nanotubes decorated with copper nanoparticles: effect on the photocurrent response", M.Scarselli, C.Scilletta, F.Tombolini, P.Castrucci, M.De Crescenzi, M.Diociaiuti, S.Casciardi, E. Gatto, M. Venanzi,
Journal of Physical Chemistry C **113**, 5860-5864 (2009).

221) "Photocurrent generation in random networks of multiwall-carbonnanotubes grown by an "all-laser" process" M. Ali El Khakani, V. Le Borgne, B. Aissa, F. Rosei, C. Scilletta, E. Speiser, M. Scarselli, P. Castrucci, M.De Crescenzi,
Applied Physics Letters **95**, 083114-083116 (2009).

222) "Photon harvesting with multiwall carbon nanotubes" M.Scarselli, C.Scilletta, F.Tombolini, P.Castrucci, M.De Crescenzi, M.Diociaiuti, S.Casciardi, E.Gatto, M.Venanzi, Superlattices and Microstructures **46**, 340-346 (2009).

223) "Poly(3-hexyl-thiophene)coil-wrapped single wall carbon nanotube investigated by scanning tunneling spectroscopy", M. Giulianini, E. R. Waclawik, J. M. Bell, M. Scarselli, P. Castrucci, M.De Crescenzi, N. Motta,
Applied Physics Letters **95**, 143116-143118 (2009).

224) "Regioregular poly(3-hexyl-thiophene) helical self-organization on carbon nanotubes"
M.Giulianini, E.R. Waclawik, J. M. Bell, M. Scarselli, P. Castrucci, M.De Crescenzi, N. Motta
Applied Physics Letters **95**, 013304-013306 (2009).

2010

225) “Carbon nanotube synthesis from germanium nanoparticles on patterned substrates”
A. Capasso, E. Waclawik, J.M. Bell, S. Ruffell, A. Sgarlata, M. Scarselli, M.De Crescenzi, N. Motta,
Journal of non-Crystalline Solids **356**, 1972-1975 (2010).

226) "Enhanced photocurrent generation from UV-laser-synthesized-single-wall-carbon-nanotubes/n-silicon hybrid planar devices”, V. Le Borgne, P. Castrucci, S. Del Gobbo, M. Scarselli, M.De Crescenzi, M. Mohamedi, M.A. El Khakani
Applied Physics Letters **97**, 193105-193107 (2010).

227) "Photoresponse induced by Ge nanodots on SiO2/Si substrate”, P.Castrucci, S. Del Gobbo, E. Speiser, M. Scarselli, M.De Crescenzi, G. Amiard, A.Ronda, I. Berbezier.
Journal of non-Crystalline Solids **356**, 1940-1942 (2010).

228) "Probing the electronic structure of carbon nanotubes by nanoscale spectroscopy”
P. Castrucci, M. M.Scarselli, M.De Crescenzi, M. Ali El Khakani, F.Rosei,
Nanoscale **2**, 1611-1625 (2010).

2011

229) "Carbon nanotube semitransparent electrodes for amorphous silicon based photovoltaic devices”, S.Del Gobbo, P. Castrucci, M. Scarselli, L. Camilli, M. De Crescenzi, L. Mariucci, A. Valletta, A. Minotti, G. Fortunato
Applied Physics Letters **98**, 183113-183115 (2011).

230) "Electrical analysis of carbon nanostructures/silicon heterojunctions designed for radiation detection” A. Tinti, F.Righetti, T.Ligonzo, A.Valentini, E.Nappi, A.Ambrosio, M.Ambrosio, C.Aramo, P. Maddalena, P.Castrucci, M.Scarselli, M.De Crescenzi, E.Fiandrini, V.Grossi, S.Santucci, M. Passacantando
Nuclear Instruments & Methods in Physics Research. Section A **629**, 377-381 (2011).

231) “Evidence of Multiwall Carbon Nanotube Deformation Caused by Poly(3-hexylthiophene) Adhesion”, M.Giulianini, E.R.Waclawik, J.M.Bell, M.De Crescenzi M, P. Castrucci, M. Scarselli, M. Diociauti, S Casciardi, N. Motta,
Journal of Physical Chemistry C **115**, 6324-6330 (2011).

232) "Influence of Cu nanoparticle size on the photo-electrochemical response from Cu–multiwall carbon nanotube composites. M.Scarselli, P.Castrucci, L.Camilli, S.DelGobbo, S.Casciardi, F.Tombolini, E.Gatto, M.Venanzi, M.De Crescenzi.
Nanotechnology **22**, 035701-035708 (2011).

233) "Light harvesting with multiwall carbon nanotube/silicon heterojunctions”
P.Castrucci, C.Scilletta, S. Del Gobbo, M. Scarselli, L.Camilli, M.Simeoni, B. Delley, A. Continenza, M.De Crescenzi,
Nanotechnology **22**, 115701-115707 (2011).

234) "Microscopic and Spectroscopic Investigation of Poly(3-hexylthiophene) Interaction with Carbon Nanotubes” M. Giulianini, E. R. Waclawik, John M. Bell, M. Scarselli, P. Castrucci, M.De Crescenzi, N. Motta.
Polymers **3**, 1433-1446 (2011).

235) "The synthesis and characterization of carbon nanotubes grown by chemical vapor deposition using a stainless steel catalyst" L. Camilli, M. Scarselli, S. Del Gobbo, P. Castrucci, F. Nanni, E. Gautron, S. Lefrant, M.De Crescenzi,
Carbon **49**, 3307-3315 (2011).

236) "Tuning Photoresponse Through Size Control of Cu Nanoparticles Deposited on Multi Wall Carbon Nanotubes" Scarselli M, Camilli L, Castrucci P, Del Gobbo S, Casciardi S, Tombolini F, Gatto E, Venanzi M, De Crescenzi M (2011).
Journal of Nanoscience and Nanotechnology **11**, 9321-9325 (2011).

237) Preface to Third International Conference on Nanostructures Self-Assembly (NANOSEA 2010), I. Berbezier I, M. De Crescenzi M., Journal of Nanoscience and Nanotechnology **11**, 9078-9079 (2011).

238) "Photovoltaic Response of Carbon Nanotube-Silicon Heterojunctions: Effect of Nanotube Film Thickness and Number of Walls", Castrucci P, Del Gobbo S, Camilli L, Scarselli M, Casciardi S, Tombolini F, Convertino A, Fortunato G, De Crescenzi M.,
Journal of Nanoscience and Nanotechnology **11**, 9202-9207 (2011).

239) "Photocurrent Generation in Ge Nanocrystal/Si Systems", Castrucci P, Del Gobbo S, Speiser E, Scarselli M, De Crescenzi M, Amiard G, Ronda A, Berbezier I., Journal of Nanoscience and Nanotechnology **11**, 9227-9231 (2011).

2012

240) "Progress in the realization of a silicon-CNT photodetector"
C.Aramo, A.Ambrosio, M.Ambrosio, P.Castrucci, M.Cilmo, M.De Crescenzi, E.Fiandrini, F.Guarino, V.Grossi, E.Nappi, M.Passacantando, G.Pignatel, S.Santucci, M.Scarselli, A.Tinti, A.Valentini,
Nuclear Instruments and Methods A **695**, 150-153 (2012).

241) "Electronic and optoelectronic nano-devices based on carbon nanotubes"
M.Scarselli, P.Castrucci, M.De Crescenzi,
Journal of Physics (Condensed Matter) **24**, 313202 (36) (2012).

242) "Innovative carbon nanotube-silicon large area photodetector"
C.Aramo, M.Ambrosio, R.Battiston, P.Castrucci, M.Cilmo, M.De Crescenzi, E.Fiandrini, F.Guarino, V.Grossi, E.Nappi, M.Passacantando, G.Pignatel, S.Santucci, M.Scarselli, A.Tinti, A.Valentini, A.Ambrosio
Journal of Instrumentation **7**, 235 (2012).

243) "Si nanotubes and nanospheres with two-dimensional polycrystalline walls"
P.Castrucci, M.Diociaiuti, C.M.Tank, S.Casciardi, F.Tombolini, M.Scarselli, M.De Crescenzi, V.L.Mathe, S.V.Bhoraskar,
Nanoscale **4**, 5195-5201 (2012).

244) "Strain analysis of noble metal islands grown on multiwalled carbon nanotubes" S.Scarselli, L.Camilli, L.Persichetti, P.Castrucci, S.Lefrant, E.Gautron, M.De Crescenzi,

Carbon **50**, 3616-3621 (2012).

245) "Enhanced UV photoresponse of KrF-laser-synthesized single-wall carbon nanotubes/n-silicon hybrid photovoltaic devices"
V.Le Borgne, L.A.Gautier, P.Castrucci, S.Del Gobbo, M.De Crescenzi, M.Ali El Khakani,
Nanotechnology **23**, 215206 (2012).

246) "Structural, electronic and photovoltaic characterization of multiwalled carbon nanotubes grown directly on stainless steel"
L.Camilli, M.Scarselli, S.Del Gobbo, P.Castrucci, E.Gautron, M.De Crescenzi,
Beilstein Journal of Nanotechnology **3**, 360-367 (2012).

247) "Ferromagnetic Mn-doped Si0.3Ge0.7 nanodots self-assembled on Si(100) "
P.De Padova, B.Olivieri, J.M.Mariot, L.Favre, I.Berbezier, C.Quaresima, B.Paci, A.Generosi, V.R.Albertini, A.Cricenti, C.Ottaviani, M.Luce, A.M.Testa, D.Peddis, D.Fiorani,
Journal of Physics (Condensed Matter) **24**, 142203 (2012).

248) "In situ formation of noble metal nanoparticles on multiwalled carbon nanotubes and its implication in metal-nanotube interactions"
M.Scarselli, L.Camilli, P.Castrucci, F.Nanni, S.Del Gobbo, E.Gautron, S.Lefrant, M.De Crescenzi,
Carbon **50**, 875-884 (2012).

249) "Playing with Peptides: How to Build a Supramolecular Peptide Nanostructure by Exploiting Helix center dot center dot center dot Helix Macrodipole Interactions"
E.Gatto, A.Porchetta, M.Scarselli, M.De Crescenzi, F.Formaggio, C.Toniolo, M.Venanzi,
Langmuir **28**, 2817-2826 (2012).

250) "High coercivity of iron-filled carbon nanotubes synthesized on austenitic stainless steel"
L.Camilli, M.Scarselli, S.Del Gobbo, F.R.Lamastra, F.Nanni, E.Gautron, S.Lefrant, F.D'Orazio, F.Lucari, M. De Crescenzi, Carbon **50**, 718-721 (2012).

252) "Photoresponse from noble metal nanoparticles-multi walled carbon nanotube composites"
M. Scarselli, L. Camilli, L. Matthes, O. Pulci, P. Castrucci, E. Gatto, M. Venanzi, M. De Crescenzi
Applied Physics Letters **101**, 241113 (2012).

2013

253) "Silicon spectral response extension through single wall carbon nanotubes in hybrid solar cells"
Del Gobbo S., Castrucci P., Fedele S., Riele L., Convertino A., Morbidoni M., De Nicola F. Scarselli M., Camilli L., De Crescenzi M.,
Journal of Materials Chemistry C **1**, 6752-6758 (2013).

254) "Pressure-dependent electrical conductivity of freestanding three-dimensional carbon nanotube network"
Camilli, L; Pisani, C; Passacantando, M; Grossi, V; Scarselli, M; Castrucci, P; De Crescenzi, M,
Applied Physics Letters **102**, 183117 (2013).

255) "Progress on the development of a silicon-carbon nanotube photodetector"
Aramo, C; Ambrosio, A; Ambrosio, M; Battiston, R; Castrucci, P; Cilmo, M; De Crescenzi,; Fiandrini; Guarino, F; Grossi, V; Maddalena, P ; Nappi, E ; Passacantando, M; Pignatel, G; Santucci, S; Scarselli, M; Tinti, A; Valentini, A

Nuclear Instruments & Methods in Physics Research A **718**, 554-556 (2013).

256) "Probing the structure of Fe nanoparticles in multiwall carbon nanotubes grown on a stainless steel substrate"
Camilli, L; Castrucci, P; Scarselli, M; Gautron, E; Lefrant, S; De Crescenzi, M
Journal of Nanoparticle Research **15**, 1846-4 (2013)

257) "Direct Evidence of Chemically Inhomogeneous, Nanostructured, Si-O Buried Interfaces and Their Effect on the Efficiency of Carbon Nanotube/Si Photovoltaic Heterojunctions"
Pintossi, C; Salvinelli, G; Drera, G; Pagliara, S; Sangaletti, L; Del Gobbo, S; Morbidoni, M; Scarselli, M; De Crescenzi, M; Castrucci, P
Journal of Physical Chemistry C117, 18688-18696 (2013).

258) "Preface to "NanoSEA 2012", I. Berbezier, M. De Crescenzi,
Thin Solid Films **543**, 1-2 (2013).

2014

259) "A three-dimensional carbon nanotube network for water treatment"
Camilli, L; Pisani, C; Gautron, E; Scarselli, M; Castrucci, P; D'Orazio, F; Passacantando, M; Moscone, D; De Crescenzi, M
Nanotechnology **25**, 065701 (2014).

2015

260) "Morphology Analysis of Cu Film Fractures in Sandwiched Methyl Methacrylate Plates"
C. Fidani, M.De Crescenzi,
Materials Science-Medziagotyra **21**, 220-225 (2015).

261) "Exploiting the hierarchical morphology of single-walled and multi-walled carbon nanotube films for highly hydrophobic coatings"
De Nicola, F; Castrucci, P ; Scarselli, M; Nanni, F. ; Cacciotti, I.; De Crescenzi, M .,
Beilstein Journal of Nanotechnology **6**, 353-360 (2015)

262) "Multi-Fractal Hierarchy of Single-Walled Carbon Nanotube Hydrophobic Coatings"
De Nicola, F; Castrucci, P; Scarselli, M; Nanni, F ; Cacciotti, I; De Crescenzi, M.,
Nature: Scientific Reports **5**, 8583 (2015).

263) "Observation of a photoinduced, resonant tunneling effect in a carbon nanotube-silicon heterojunction"
Aramo, C ;Ambrosio, A ; Ambrosio, M ; Boscardin, M ; Castrucci, P; Crivellari, M ; Cilmo, M; De Crescenzi, M De Nicola, F; Fiandrini, E,; Grossi, V; Maddalena, P; Passacantando, M; Santucci, S; Scarselli, M ., Valentini, A,
Beilstein Journal of Nanotechnology **6**, 704-710 (2015).

264) "Applications of three-dimensional carbon nanotube networks"
Scarselli, M.,Castrucci, P., De Nicola, F., Cacciotti, I., Nanni, F., Gatto, E ; Venanzi, M; De Crescenzi, M.,
Beilstein Journal of Nanotechnology **6**, 792-798 (2015).

265) "Super-hydrophobic multi-walled carbon nanotube coatings for stainless steel"

De Nicola, F., Castrucci, P; Scarselli, M., Nanni F., Cacciotti, I., De Crescenzi M.
Nanotechnology **26**, 145701 (2015).

266) "Steering the Efficiency of Carbon Nanotube-Silicon Photovoltaic Cells by Acid Vapor Exposure: A Real-Time Spectroscopic Tracking"
C. Pintossi, S. Pagliara, G. Drera, F. De Nicola, P. Castrucci, M. De Crescenzi, M. Crivellari, M. Boscardin, L.Sangaletti,
ACS Applied Materials & Interfaces **7**, 9436-9444 (2015)

267) Preface to "Self-assembly of nanostructures and nanomaterials", I. Berbezier , M. De Crescenzi
Beilstein Journal of Nanotechnology **6**, 1397-1398 (2015)

268) "Peptide flatlandia: a new-concept peptide for positioning of electroactive probes in proximity to a metal surface", L. Edoardo, K. Wright, M. Caruso, E. Gatto, A.Palleschi, M.Scarselli, M.De Crescenzi, M.Crisma, F. Formaggio, C.Toniolo, M.Venanzi,
Nanoscale **7**, 15495-506 (2015)

2016

269) "Formation of Silicene Nanosheets on Graphite",
M.De Crescenzi, M.Scarselli, P.Castrucci, M.Abbarchi, F.Jardali, A.Ronda, I.Berbezier, H.Vach,
ACS Nano **10**, 11163–11171 (2016).

270) "Growth Mechanisms of Inductively-Coupled Plasma Torch Synthesized Silicon Nanowires and their associated photoluminescence properties", M. Agati, G. Amiard, V. Le Borgne, P. Castrucci, R. Dolbec, M. De Crescenzi, M. A. El Khakani, S. Boninelli,
Nature: Scientific Reports **5**, 37598 (2016).

271) "Solar Cells Incorporating Water/Alcohol-Soluble Electron-Extracting DNA Nanolayers", J Dagar, M. Scarselli, M, De Crescenzi, T. M. Brown,
ACS Energy Letters **1**, 510–515 (2016).

272) "Are Two Better Than One? A New Approach for Multidentate Grafting of Peptides to a Gold Substrate", M.Caruso, E.Gatto, A. Palleschi, M.Scarselli, M.De Crescenzi, F. Formaggio,E Longo, C. Toniolo, K. Wright, M.Venanzi,
Zeitschrift fur Physikalishe, Chemie **230**, 1351-1371 (2016).

273) "Moth-eye effect in hierarchical carbon nanotube anti-reflective coatings"
F.De Nicola, P.Hines, M.De Crescenzi, N.Motta,
Carbon **108**, 262-267 (2016).

274) "van der Waals Heteroepitaxy of Germanene Islands on Graphite", L.Persichetti, F.Jardali, H.Vach, A. Sgarlata, I. Berbezier, M. De Crescenzi, A Balzarotti,
J. Phys. Chem. Lett. **7**(16), 3246–3251 (2016).

275) "Transport properties in aggregates of Nb nanowires templated by carbon nanotube films", M.Salvato, C. Cirillo, R. Fittipaldi, S.L. Prischepa, A. Vecchione, F. De Nicola, P. Castrucci, M. De Crescenzi, M.Scarselli, C. Attanasio,
Carbon **105**, 544-550 (2016).

276) "Light induced tunnel effect in CNT-Si photodiode"

C. Aramo, M.Ambrosio, C.Bonavolontà, M.Boscardin, P.Castrucci, M.Crivellari, M. DeCrescenzi, C.deLisio, E.Fiandrini, V.Grossi, P.Maddalena, M.Passacantando, S.Santucci, M.Scarselli, A.Valentini, M.Valentino,
Nuclear Instruments and Methods in Physics Research A **824**, 76–78 (2016).

277) "Record efficiency of air-stable multi-walled carbon nanotube/silicon solar cells"
F.De Nicola, M.Salvato, C.Cirillo, M.Crivellari, M.Boscardin, M.Scarselli, F.Nanni, I.Cacciotti, M.De Crescenzi, P.Castrucci,
Carbon **101**, 226-234 (2016).

2017

278) "100% internal quantum efficiency in polychiral single-walled carbon nanotube bulk heterojunction/silicon solar cells",
De Nicola, F., M. Salvato, C. Cirillo, M. Crivellari, M. Boscardin, M. Passacantando, M. Nardone, F. De Matteis, N. Motta, M. De Crescenzi, P. Castrucci,
Carbon **114**, 402-410 (2017).

279) "Single walled carbon nanotube/Si heterojunctions for high responsivity photodetectors"
M Salvato, M Scagliotti, M De Crescenzi, M Crivellari, P Prosposito, P.Castrucci
Nanotechnology 28 (43), 435201 (2017).

280) "Thin randomly aligned hierarchical carbon nanotube arrays as ultrablack metamaterials"
F De Nicola, P Hines, M De Crescenzi, N Motta
Physical Review B **96** (4), 045409 (2017).

281) "Hybridized C–O–Si Interface States at the Origin of Efficiency Improvement in CNT/Si Solar Cells", S Ponzoni, S Achilli, C Pintossi, G Drera, L Sangaletti, P Castrucci, M.De Crescenzi
ACS Applied Materials & Interfaces **9** (19), 16627-16634 (2017).

282) "A cross-functional nanostructured platform based on carbon nanotube-Si hybrid junctions: where photon harvesting meets gas sensing"
F. Rigoni, C. Pintossi, G. Drera, S. Pagliara, G. Lanti, P. Castrucci, M. De Crescenzi, L. Sangaletti
Nature: Scientific Reports **7**, 44413 (2017).

283) "Coating ZnO nanoparticle films with DNA nanolayers for enhancing the electron extracting properties and performance of polymer solar cells"
J. Dagar, G. Scavia, M. Scarselli, S. Destri, M. De Crescenzi, T.M. Brown
Nanoscale **9** (48), 19031-19038 (2017).

284) "Self-assembly of silicon nanowires studied by advanced transmission electron microscopy"
M Agati, G Amiard, V Le Borgne, P Castrucci, R Dolbec, M De Crescenzi, M.Ali El Khakani,
Beilstein Journal of Nanotechnology **8**, 440 (2017).