

CURRICULUM VITAE

Personal Information



Stefano Carlo Cecchi, Dr.

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ORCID: <https://orcid.org/0000-0002-2243-7268>

Date of birth: 22/08/1985

Nationality: Italian

Languages: Italian (mother tongue)

English (fluent)

German (basic)

Spanish (basic)

CV at a Glance

+ From October 2021: **assistant professor** in the department of material science at the University of Milano Bicocca; visiting scientist at Paul-Drude-Institut (PDI)

+ (2015-2021) Full time scientist (postdoc) in the department of Epitaxy at PDI in Berlin

+ **Since 2020 principal investigator of PDI research on phase-change materials and 2D tellurium**

+ (2013) Ph.D. in Physics and Nanotechnology and innovative nano-structured materials from the Politecnico di Milano and the Scuola Interpolitecnica di Dottorato, Italy (group of Prof. G. Isella)

+ (2009) Master's degree in electrical engineering from the Politecnico di Milano, Italy

+ Expertise in solid-state physics and fabrication and characterization of thin films spanning a wide range of materials

+ Technical expertise: *epitaxy of semiconductors* by molecular beam epitaxy, chemical vapor deposition and metalorganic vapor phase epitaxy; several *characterization techniques*; *synchrotron science*

+ Scientific background: epitaxy of SiGe heterostructures (multiple quantum wells and superlattices) for thermoelectric and spintronic applications; growth of Ge-Sb-Te and In-Sb-Te nanostructures for advanced phase-change-memory applications

+ Current activity: Epitaxy of advanced materials for quantum technology; van der Waals epitaxy of layered Ge-Sb-Te chalcogenide materials and superlattices; Van der Waals epitaxy of 2D tellurium

+ Author or co-author of **80 scientific publications** (of which 57 regular papers); **Citations: 1128**;
Current **Hirsch index: 18** (source: Scopus)

Professional Appointments

October 2021 – Present

Assistant professor

Department of Materials Science, University of Milano Bicocca, Milano, Italy (<https://www.mater.unimib.it/>)

Research activity: Epitaxy of advanced materials and nanostructures for quantum technology, ICT and energy applications. Teaching and laboratories of physics.

October 2021 – Present

Visiting scientist

Paul-Drude-Institut für Festkörperelektronik, Berlin, Germany (<http://www.pdi-berlin.de/home/>)

Research activity: growth and characterization of Ge-Sb-Te alloys and superlattices for phase-change memory applications (EU Horizon 2020 project BeforeHand (GA 824957))

March 2020 – September 2021

Principal investigator (PI) and EU project responsible of PDI unit

Paul-Drude-Institut für Festkörperelektronik, Berlin, Germany (<http://www.pdi-berlin.de/home/>)

Research activity: growth and characterization of Ge-Sb-Te alloys and superlattices for phase-change memory applications (EU Horizon 2020 project BeforeHand (GA 824957)). Van der Waals epitaxy 2D tellurium.

April 2018 – Present

Italian habilitation for associate professor (Abilitazione Scientifica Nazionale)

Bando D.D. 1532/2016, Settore concorsuale 02/B1, Fisica sperimentale della materia, Fascia: II

April 2015 – September 2021

Full time scientist (postdoc)

Paul-Drude-Institut für Festkörperelektronik, Berlin, Germany (<http://www.pdi-berlin.de/home/>)

Research activity: growth and characterization of Ge-Sb-Te alloys and superlattices for phase-change memory applications. (EU project PASTRY No 317746 and Leibniz Gemeinschaft Competition)

September 2013 – March 2015

Postdoctoral researcher

MDM Laboratory, CNR-IMM, Unità di Agrate Brianza – Agrate Brianza (MB), Italy

(<http://www.mdm.imm.cnr.it/>)

Research activity: MOVPE growth of GeSbTe and InSbTe thin films and nanostructures for innovative phase change memories applications (EU Project SYNAPSE No. 310339)

January 2013 – September 2013

Postdoctoral researcher

L-NESS Laboratory, Dipartimento di Fisica, Politecnico di Milano - Polo territoriale di Como – Como, Italy

Research activity: Growth and characterization of SiGe heterostructures for thermoelectric (EU Project GREEN Silicon No. 257750) and spintronic applications

October 2011 – March 2012

Visiting Ph.D. student

Institut für Halbleiter und Festkörperphysik, Johannes Kepler Universität, Linz, Austria (<http://www.jku.at/hfp/>)

Research activity: X-ray scattering from SiGe nanostructures

Tutor: Prof. Julian Stangl

March 2010 – July 2014

Teaching and laboratory assistant of experimental physics

Dipartimento di Fisica, Politecnico di Milano, Milano, Italy (www.fisi.polimi.it)

Fisica sperimentale, Facolta' di Ingegneria Industriale - Ing. Aerospaziale, Energetica, Meccanica - Politecnico di Milano; (A.A. 2009-10, A.A. 2010-11, A.A. 2011-12, A.A. 2012-13, A.A. 2013-14)

2007 – 2009

University internships

(Master) Technor Italsmea S.p.A., Gessate (MI), Italy

Activity: Thermal management of high-power LEDs: development of innovative solutions

June 2009 – November 2009

(Bachelor) Henergy S.r.l., Milano, Italy

Activity: Distributed generation by vertical-axis wind turbines: market analysis, feasibility study and preliminary design

March 2007 – June 2007

Education and TrainingSeptember 28th-29th 2020

Impulsplus workshop on “Career Planning and Navigation on your way to Professorship”

Humboldt Graduate School, Berlin, Germany

September 2nd-3rd 2019

IKZ Summer School on “Quantum Computing as a Material Challenge”

Leibniz-Institut für Kristallzüchtung, Berlin, Germany

November 9th 2018Science^{PLUS} Management Workshop “Project Management in & outside academia: Tools of the trade for challenges”

Forschungsverbund Berlin e.V, Berlin, Germany

June 5th 2018

ERC-Workshop “European Research Council (ERC) Workshop for applicants”

Leibniz association, Berlin, Germany

In cooperation with the National Contact Point for the European Research Council (NCP ERC)

March 19th–21st 2018

XRD-Workshop “Structural analysis of crystalline materials”

SFB787, Institut für Festkörperphysik, TU Berlin, Berlin and Malvern Panalytical

January 2011 – December 2012

Inter-university Ph.D. program in Nanotechnology and innovative nano-structured materials
“Scuola Interpolitecnica di Dottorato”, Politecnico di Torino, Torino, Italy (<http://sipd.polito.it/>)
Research project title: Growth and characterization of SiGe heterostructures for thermoelectric applications
Funding: 10k€ after evaluation of a research project

January 2010 – December 2012

Ph.D. in Physics

Dipartimento di Fisica, Politecnico di Milano, Milano, Italy (www.fisi.polimi.it)

Research activity: Growth and characterization of SiGe heterostructures for thermoelectric (EU Project GREEN Silicon No. 257750) and spintronic applications

Thesis title: “Deposition and Characterization of Silicon-Germanium Heterostructures for Thermoelectric Devices”

Advisor professor: Giovanni Isella

Final exam: February 28th 2013

January 2010 – December 2012

Ph.D. schools

- (2012) + Summer school – Scuola Interpolitecnica di Dottorato
Nanotechnologies and innovative nanostructured materials
- + 17th International Winterschool on New Developments in Solid State Physics
New developments in solid state physics
- (2011) + NiPS Summer School 2011 and Workshop
Energy harvesting at micro and nanoscale
- + 6th Optoelectronics and Photonics Winter School
Physics and applications of T-rays
- (2010) + Transalp'Nano 2010 – Satellite School
Quantum wires, boxes and molecules

2007 – 2009

Master degree in Electrical engineering

Dipartimento di Ingegneria Elettrica, Politecnico di Milano, Milano, Italy (www.polimi.it)

Thesis title: “Thermal management of high-power LEDs: development of innovative solutions”

Final mark: 110/110 cum Laude

2004 – 2007

Bachelor degree in Electrical engineering

Dipartimenti di Ingegneria Elettrica, Politecnico di Milano, Milano, Italy (www.polimi.it)

Thesis title: “Production of electricity from wind power: technology and applications”

Final mark 108/110

1999 – 2004

Scientific high school diploma (liceo scientifico P.N.I.)

Final mark 100/100

Parental leave

December 30th 2019 – February 29th 2020

19.5/39 working hours/week

October 3rd – November 2nd 2018

24/39 working hours/week

December 3rd 2017 – May 2nd 2018

30/39 working hours/week

September 3rd – October 2nd 2017

19.5/39 working hours/week

Technical expertise

Epitaxy of semiconductors

- + Van der Waals epitaxy of 2D tellurides
- + Molecular beam epitaxy of Ge-Sb-Te alloys and superlattices
- + Epitaxy of SiGe heterostructures by low-energy plasma-enhanced chemical vapor deposition
- + Metalorganic vapor phase epitaxy of chalcogenide nanostructures
- + Vacuum systems
- + Preparation and treatment of silicon surfaces
- + Preparation and treatment of graphene/SiC surfaces

Characterization techniques

- + X-ray diffraction and reflectivity
- + X-ray diffraction simulation
- + Reflection high-energy electron diffraction
- + Atomic force microscopy
- + Piezoresponse force microscopy
- + Raman spectroscopy
- + Scanning Electron Microscopy
- + Total Reflection X-ray Fluorescence
- + Selective wet defect etching (for SiGe alloys)
- + Electrical measurements at low temperature
- + Rapid thermal annealing

Synchrotron science

- + high resolution X-ray diffraction
- + scanning nano-diffraction
- + grazing incidence X-ray diffraction

Granted Research

Research projects

January 2019 – Present

RESPONSIBLE OF PDI UNIT (January 2020 – Present)

Coordinator of the work of a technician

SCIENTIFIC CONTACT OF PDI (September 2019 – December 2019)

PARTICIPANT (January 2019 – August 2019)

in the EU Horizon 2020 project BeforeHand (GA 824957);

258 k€;

Coordinator: Dr. R. Calarco (PDI, Berlin; CNR-IMM, Rome (from September 2019))

February 2018 – January 2020

SCIENTIFIC CONTACT OF PDI in the project ECOS granted by Fondazione Cariplo

12.5 k€;

Coordinator: Dr. C. Rinaldi, (Politecnico di Milano, Milan)

January 2011 – December 2012

PI of inter-university Ph.D. program “Scuola Interpolitecnica di Dottorato”;

Politecnico di Torino, Torino;

Funding: 10 k€ after evaluation of a research project;

Advisor: Prof. G. Isella.

September 2015 – June 2019

PARTICIPANT in the Leibniz Gemeinschaft project: “Epitaxial phase change superlattices designed for investigation of non-thermal switching”;

Coordinators: Dr. R. Calarco, Dr. T. Flissikowski (PDI, Berlin)

April 2015 – November 2015

PARTICIPANT in the EU FP7 project: PASTRY (GA 317746);

Coordinator: Dr. A. Redaelli (Micron Semiconductor Italia S.r.l.)

September 15th 2013 – March 25th 2015

PARTICIPANT in the EU FP7 project: SYNAPSE (GA 310339);

Coordinator: Dr. M. Longo (Lab MDM, CNR-IMM)

August 2010 – July 2013

PARTICIPANT in the EU FP7 project: GREEN Silicon (GA 257750);

Coordinator: Prof. D.J. Paul (University of Glasgow)

Funded experiments (competitive selection)

Synchrotron experiments

MAIN PROPOSER AND EXPERIMENTAL LEADER

+ 16103407-ST, THz spectroscopy (BESSY II, THz beamline), April 11th – 24th 2016

Proposal title: Time-resolved THz magneto-optical Kerr effect in Sb₂Te₃/GeTe superlattices

+ MA-2467, X-ray diffraction (ESRF ID01 beamline), March 4th – 9th 2015

Proposal title: Nanodiffraction investigation of self-assembled phase change GeSbTe islands integrated on silicon

+ I-20130417 EC, X-ray diffraction (PETRA III - DESY, P08 beamline), October 7th – 11th 2013

Proposal title: Structural investigation of ultra-thin Si/Ge superlattices.

CO-PROPOSER AND EXPERIMENTALIST

+16103396-ST, Time-resolved X-ray absorption spectroscopy (BESSY II, FEMTOSPEX), May 02nd – 28th 2016

+ MA-1703, X-ray diffraction (ESRF ID01 beamline), April 17th – 24th 2013

CO-PROPOSER

+ I-20190956, Grazing incidence diffraction (PETRA III – DESY, P08 beamline), rescheduled in June 2021

+ HC-4425, EXAFS (ESRF BM08 beamline), February 3rd – 12th 2021

+ 15202730-ST, THz spectroscopy (BESSY II, THz beamline), January 11th – 24th 2016

EXPERIMENTALIST

+ 15102086-ST, THz spectroscopy (BESSY II, THz beamline), June 29th – July 12th 2015

X-ray Free Electron Laser Experiments

CO-PROPOSER

+ 2619, Time-resolved X-ray absorption spectroscopy (EU-XFEL, SCS SASE3), November 11th – 16th 2020

Proposal title: Ultrafast element selective electronic dynamics in photo-excited phase change material application

Transmission Electron Microscopy experiments (ESTEEM3 EU project)

CO-PROPOSER

+ ID: 99, Scanning Transmission Electron Microscopy (BEYOND-NANO, Catania), August 2020

Proposal title: EPIGEO – EPItaxial GE-rich GeSbTe alloys and heterostructures for automotive memOry application

Honors and Awards

(2021)

Paper graphic selected for the cover of the Special Issue: Phase-Change and Ovonic Materials
Zallo et al., Phys. Status Solidi RRL 15, 2000434 (2021).

(2019)

Marie Skłodowa-Curie Actions Seal of Excellence

H2020-MSCA Individual Fellowship 2018

Project proposal 845216, SULTAN

Score: 89.2%

Selected as participant in the 69th Lindau Nobel Laureate Meeting

AIT young members best paper award 2018

AIT – Associazione Italiana di Termoelettricità

Paper presented: Cecchi et al., Adv. Funct. Mater. 29, 1805184 (2019).

(2018)

Research activity selected as highlight for PDI annual report and meeting (2018)

(2017)

First author publication selected as Editor's pick of APL Materials

Cecchi et al., APL Materials 5, 026107 (2017).

(2015)

Invited paper

S. Cecchi et al., *Review of thermoelectric characterization techniques suitable for SiGe multilayer structures.*, Eur. Phys. J. B (2015) 88: 70.

Contribution to the Topical Issue “Silicon and Silicon related Materials for Thermoelectricity”, edited by Prof. Dario Narducci.

(2013)

High Qualified Research Doctor in Material Science and Technology

Awarded by the Board of Examiners "Nanotechnologies and nanostructured innovative materials" in the frame of Scuola Interpolitecnica di Dottorato (28th February 2013)

"The board unanimously assessed outstanding the research work and decided to award the degree of High Qualified Research Doctor to the candidate."

Board members: Prof. Stefano Ossicini(President), Prof. Thomas Bein(Member), Prof. Carlo Lamberti(Secretary).

(2012)

Young Scientist Award

2012 E-MRS Spring meeting (14th – 18th May 2012)

In recognition of the outstanding paper contribution to Symposium D - Unconventional thermoelectrics: from new materials to energyconversion devices.

(2011)

Selected for the inter-university Ph.D. program “Scuola Interpolitecnica di Dottorato”;

Politecnico di Torino, Torino;

Funding: 10 k€ after evaluation of a research project;

Advisor: Prof. G. Isella.

Teaching and student supervision

December 16th 2020

Guest lecturer for the course of Introduction of crystal growth (A.A. 2020-21)

Dipartimento di Fisica, Università degli studi di Roma "Tor Vergata", Roma, Italy

Topic: Use of X-ray diffraction for the study of epitaxial thin films and heterostructures

March 02nd 2020 – January 31th 2021

Master thesis host-supervisor

Student: S. Isceri;

Supervisor: Prof. Giovanni Isella;

University: Dipartimento di Fisica, Politecnico di Milano;

Topic: Van der Waals epitaxy of 2D tellurium

January 10th–11th 2019

Guest lecturer for the course of Introduction of crystal growth (A.A. 2018-19)

Dipartimento di Fisica, Università degli studi di Roma "Tor Vergata", Roma, Italy

Topic: Use of X-ray diffraction for the study of epitaxial thin films and heterostructures

March 16th – August 31st 2018

Master thesis co-supervisor

Student: F. Di Biagio;

Supervisors: Prof. Fabrizio Arciprete, Dr. Raffaella Calarco;

University: Dipartimento di Scienza dei Materiali, Università degli studi di Roma "Tor Vergata";

Topic: Crystallization and epitaxy studies of Ge-rich $(\text{GeTe})_n(\text{Sb}_2\text{Te}_3)_m$ alloys.January 21st – February 22nd 2017

Ph.D. stage supervisor

Student: E. Tisbi, Ph.D. program in Physics (XXXI cycle);

Ph.D. supervisor: Prof. Fabrizio Arciprete;

University: Dipartimento di Fisica, Università degli studi di Roma "Tor Vergata";

Topic: Epitaxial growth of Sb_xTe_y alloys by Molecular Beam Epitaxy and their characterization by X-ray diffraction.March 2010 – July 2014

Teaching and laboratory assistant of experimental physics for engineering

Dipartimento di Fisica, Politecnico di Milano, Milano, Italy

A.A. 2009-10, A.A. 2010-11, A.A. 2011-12, A.A. 2012-13, A.A. 2013-14

Memberships2016 – Present

MRS – Material Research Society

2015 – Present

AIT – Associazione Italiana di Termoelettricità

2011 – 2015

SIF – Società Italiana di Fisica

Research Statistics

Source: SCOPUS (March 23rd 2022):

+ *h*-index: 18

+ Documents by author: 80 (57 regular papers)

+ Total citations: 1128

Research Highlights

+ Van der Waals epitaxy of layered Ge-Sb-Te chalcogenide materials and superlattices

1. Varotto S., Nessi L., **Cecchi S.**, Sławińska J., Noël P., Petrò S., Fagiani F., Novati A., Cantoni M., Petti D., Albisetti E., Costa M., Calarco R., Buongiorno Nardelli M., Bibes M., Picozzi S., Attané J.-P., Vila L., Bertacco R., Rinaldi C.
Room-temperature ferroelectric switching of spin-to-charge conversion in germanium telluride.
NATURE ELECTRONICS, vol. 4, p. 740-747, ISSN: 2520-1131, doi: 10.1038/s41928-021-00653-2
2. **Cecchi S.***, Dragoni D., Kriegner D., Tisbi E., Zallo E., Arciprete F., Holý V., Bernasconi M., Calarco R. (2019).
Interplay between Structural and Thermoelectric Properties in Epitaxial Sb_{2+x}Te₃ Alloys.
ADVANCED FUNCTIONAL MATERIALS, vol. 29, p. 1805184, ISSN: 1616-3028, doi: 10.1002/adfm.201805184
3. Wang R., Lange F. R. L., **Cecchi S.***, Hanke M., Wuttig M., Calarco R. (2018).
2D or not 2D: Strain Tuning in Weakly Coupled Heterostructures.
ADVANCED FUNCTIONAL MATERIALS, vol. 28, p. 1705901, ISSN: 1616-3028, doi: 10.1002/adfm.201705901
4. Rinaldi C., Varotto S., Asa M., Sławińska J., Fujii J., Vinai G., **Cecchi S.**, Di Sante D., Calarco R., Vobornik I., Panaccione G., Picozzi S., Bertacco R. (2018).
Ferroelectric Control of the Spin Texture in GeTe.
NANO LETTERS, vol. 18, p. 2751-2758, ISSN: 1530-6992, doi: 10.1021/acs.nanolett.7b04829
5. **Cecchi S.***, Zallo E., Momand J., Wang R., Kooi B. J., Verheijen M. A., Calarco R. (2017).
Improved structural and electrical properties in native Sb₂Te₃/GexSb₂Te_{3+x} van der Waals superlattices due to intermixing mitigation.
APL MATERIALS, vol. 5, p. 026107-1-026107-6, ISSN: 2166-532X, doi: 10.1063/1.4976828

+ Epitaxy of SiGe heterostructures

1. Giorgioni A., Paleari S., **Cecchi S.**, Vitiello E., Grilli E., Isella G., Jantsch W., Fanciulli M., Pezzoli F. (2016).
*Strong confinement-induced engineering of the *g* factor and lifetime of conduction electron spins in Ge quantum wells.*
NATURE COMMUNICATIONS, vol. 7, p. 13886-1-13886-11, ISSN: 2041-1723, doi: 10.1038/ncomms13886
2. Chaisakul P., Marris-Morini D., Frigerio J., Chrastina D., Rouifed M.-S., **Cecchi S.**, Crozat P., Isella G., Vivien L. (2014).
Integrated germanium optical interconnects on silicon substrates.
NATURE PHOTONICS, vol. 8, p. 482-488, ISSN: 1749-4885, doi: 10.1038/nphoton.2014.73

3. **Cecchi S.***, Gatti E., Chrastina D., Frigerio J., Müller Gubler E, Paul D. J., Guzzi M., Isella G. (2014).
Thin SiGe virtual substrates for Ge heterostructures integration on silicon.
JOURNAL OF APPLIED PHYSICS, vol. 115, p. 093502-1-093502-6, ISSN: 0021-8979, doi: 10.1063/1.4867368
4. Pezzoli F., Bottegoni F., Trivedi D., Ciccacci F., Giorgioni A., Li P., **Cecchi S.**, Grilli E., Song Y., Guzzi M., Dery H., Isella G. (2012).
Optical Spin Injection and Spin Lifetime in Ge Heterostructures.
PHYSICAL REVIEW LETTERS, vol. 108, p. 156603-1-156603-5, ISSN: 0031-9007, doi: 10.1103/PhysRevLett.108.156603
5. Carroll L., Friedli P., Neuenschwander S., Sigg H., **Cecchi S.**, Isa F., Chrastina D., Isella G., Fedoryshyn Y., Faist J. (2012).
Direct-Gap Gain and Optical Absorption in Germanium Correlated to the Density of Photoexcited Carriers, Doping, and Strain.
PHYSICAL REVIEW LETTERS, vol. 109, p. 057402-1-057402-5, ISSN: 0031-9007, doi: 10.1103/PhysRevLett.109.057402

Peer-reviewed scientific publications – summary

The list of peer-reviewed scientific publications includes products published in the following main journals:

- + Nature Photonics (1)
- + Nature Electronics (1)
- + Nature Communications (1)
- + Communications Physics (1)
- + Scientific Reports (3)
- + Advanced Functional Materials (2)
- + Physica Status Solidi (RRL) (2)
- + Nano Letters (1)
- + Crystal Growth & Design (1)
- + Physical Review Letters (2)
- + Physical Review B (4)
- + Physical Review Applied (1)
- + Applied Physics Letters (10)
- + APL Materials (1)
- + Journal of Applied Physics (5)

Peer-reviewed scientific publications

1. **Cecchi S.**, Lopez Garcia I., Mio A.M., Zallo E., Abou El Kheir O.; Calarco R.; Bernasconi M., Nicotra G., Privitera S.M.S. (2022).
Crystallization and Electrical Properties of Ge-Rich GeSbTe Alloys.
NANOMATERIALS, vol. 12, p. 631, ISSN: 2079-4991, doi: 10.3390/nano12040631
2. Arciprete F., Boschker J.E., **Cecchi S.**, Zallo E., Bragaglia V., Calarco R. (2022).
Hints for a General Understanding of the Epitaxial Rules for van der Waals Epitaxy from Ge-Sb-Te Alloys.
ADVANCED MATERIALS INTERFACES, p. 2101556, ISSN: 2196-7350, doi: 0.1002/admi.202101556
3. Varotto S., Nessi L., **Cecchi S.**, Sławińska J., Noël P., Petrò S., Fagiani F., Novati A., Cantoni M., Petti D., Albisetti E., Costa M., Calarco R., Buongiorno Nardelli M., Bibes M.; Picozzi S., Attané J.-P., Vila L., Bertacco R., Rinaldi C. (2021).
Room-temperature ferroelectric switching of spin-to-charge conversion in germanium telluride.
NATURE ELECTRONICS, vol. 4, p. 740-747, ISSN: 2520-1131, doi: 10.1038/s41928-021-00653-2
4. Rimoldi M., Cecchini R., Wiemer C., Longo E., **Cecchi S.**, Mantovan R., Longo M. (2021).
Effect of Substrates and Thermal Treatments on Metalorganic Chemical Vapor Deposition-Grown Sb₂Te₃ Thin Films. (2021)
CRYSTAL GROWTH & DESIGN, vol. 21, p. 5135-5144, ISSN: 1528-7483, doi: 10.1021/acs.cgd.1c00508
5. Zallo E., Dragoni D., Zaytseva Y., **Cecchi S.**, Borgardt N. I., Bernasconi M., Calarco R. (2021).
Evolution of Low-Frequency Vibrational Modes in Ultra-Thin GeSbTe Films.
PHYSICA STATUS SOLIDI (RRL), vol. 21, p. 2000434, ISSN: 1862-6254, doi: 10.1002/pssr.pssr.202000434
6. Tisbi E., Placidi E., Magri R., Proposito P., Francini R., Zaganelli A., **Cecchi S.**, Zallo E., Calarco R., Luna E., Honolka J., Vondráček M., Colonna S., Arciprete F. (2020).
Increasing Optical Efficiency in the Telecommunication Bands of Strain-Engineered Ga(As,Bi) Alloys.
PHYSICAL REVIEW APPLIED, vol. 14, p. 014028-1-014028-14, ISSN: 2331-7019, doi: 10.1103/PhysRevApplied.14.014028
7. Zucchetti C., Ballabio A., Chrastina D., **Cecchi S.**, Finazzi M., Virgilio M., Isella G., Bottegoni F. (2020).
Probing the in-plane electron spin polarization in Ge/Si_{0.15}Ge_{0.85} multiple quantum wells.
PHYSICAL REVIEW. B, vol. 101, p. 115408-1-115408-6, ISSN: 2469-9950, doi: 10.1103/PhysRevB.101.115408
8. D'Arrigo G., Mio A. M., Boschker J. E., Meli A., **Cecchi S.**, Zallo E., Sciuto A., Buscema M., Bruno E., Calarco R., Rimini E. (2020).
Crystallization of nano amorphized regions in thin epitaxial layer of Ge₂Sb₂Te₅.
JOURNAL OF PHYSICS D: APPLIED PHYSICS, vol. 53, p. 194001, ISSN: 0022-3727, doi: 10.1088/1361-6463/ab71ae
9. Di Biagio F., **Cecchi S.**, Arciprete F., Calarco R. (2019).
Crystallization Study of Ge-Rich (GeTe)_m(Sb₂Te₃)_n Using Two-step Annealing Process.
PHYSICA STATUS SOLIDI (RRL), vol. 13, p. 1800632, ISSN: 1862-6254, doi: 10.1002/pssr.201800632
10. **Cecchi S.**, Dragoni D., Kriegner D., Tisbi E., Zallo E., Arciprete F., Holý V., Bernasconi M., Calarco R. (2019).
Interplay between Structural and Thermoelectric Properties in Epitaxial Sb_{2+x}Te₃ Alloys.
ADVANCED FUNCTIONAL MATERIALS, vol. 29, p. 1805184, ISSN: 1616-3028, doi: 10.1002/adfm.201805184

11. Wang R., Lange F. R. L., **Cecchi S.**, Hanke M., Wuttig M., Calarco R. (2018).
2D or not 2D: Strain Tuning in Weakly Coupled Heterostructures.
ADVANCED FUNCTIONAL MATERIALS, vol. 28, p. 1705901, ISSN: 1616-3028, doi:
10.1002/adfm.201705901
12. Kellner J., Bihlmayer G., Liebmann M., Otto S., Pauly C., Boschker J. E., Bragaglia V., **Cecchi S.**, Wang R. N., Deringer V. L., Küppers P., Bhaskar P., Golias E., Sánchez-Barriga J., Dronskowski R., Fauster T., Rader O., Calarco R., Morgenstern M. (2018).
Mapping the band structure of GeSbTe phase change alloys around the Fermi level.
COMMUNICATIONS PHYSICS, vol. 1, p. 1-11, ISSN: 2399-3650, doi: 10.1038/s42005-018-0005-8
13. Rinaldi C., Varotto S., Asa M., Sławińska J., Fujii J., Vinai G., **Cecchi S.**, Di Sante D., Calarco R., Vobornik I., Panaccione G., Picozzi S., Bertacco R. (2018).
Ferroelectric Control of the Spin Texture in GeTe.
NANO LETTERS, vol. 18, p. 2751-2758, ISSN: 1530-6992, doi: 10.1021/acs.nanolett.7b04829
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Optical Spin Injection and Spin Lifetime in Ge Heterostructures.
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57. Bottegoni F., Isella G., **Cecchi S.**, Ciccacci F. (2011).
Spin polarized photoemission from strained Ge epilayers.
APPLIED PHYSICS LETTERS, vol. 98, p. 242107-1-242107-3, ISSN: 0003-6951, doi: 10.1063/1.3599493

Invited Presentations at conferences and seminars

1. February 21st 2020 – Università degli studi di Milano Bicocca – Milano, Italy – Invited seminar
“Van der Waals epitaxy and characterization of quasi-two-dimensional Ge-Sb-Te alloys and superlattices”
2. June 25th 2019 – Leti Innovation Days 2019, Non-Volatile Memories Workshop – Grenoble, France – Invited oral contribution
“Epitaxial Phase Change Alloys and Heterostructures for Memory Applications”
3. February 28th 2019 – Charles University Prague – Prague, Czech Republic – Invited seminar
“Interplay between structural and thermoelectric properties in epitaxial $\text{Sb}_{2+x}\text{Te}_3$ alloys”
4. November 5th–6th 2018 – PhOM Research Seminar « 2D Materials and heterostructures » – Paris, France – Invited oral contribution
“2D or not 2D: Strain tuning in weakly coupled heterostructures”
5. October 24th 2018 – Politecnico di Milano – Milano, Italy – Invited seminar
“Interplay between structural and electrical properties in epitaxial $\text{Sb}_{2+x}\text{Te}_3$ alloys”

6. September 3rd–5th 2017 – EPCOS 2017 – Aachen, Germany – Invited oral contribution
“Molecular Beam Epitaxy and Characterization of Ge-Sb-Te Superlattices”
7. May 24th 2016 – Charles University Prague – Prague, Czech Republic – Invited seminar
“Molecular Beam Epitaxy and Characterization of GeTe-Sb₂Te₃ Alloys and Superlattices”

Presentations at conferences and seminars

1. September 13th–15th 2021 – EPCOS 2021 – Online – Oral contribution
“Influence of Sb on the epitaxy of Ge(Sb)Te thin films on Si(111) substrates”
2. September 23rd–25th 2019 – ECT 2019 – Limassol, Cyprus – Oral Contribution
“Interplay between structural and thermoelectric properties in epitaxial Sb_{2+x}Te₃ alloys”
3. April 22nd–26th 2019 – MRS 2019 Spring Meeting – Phoenix, USA – Oral Contribution
“Growth and Characterization of Epitaxial GeSbTe Films towards Ge-rich compositions”
4. September 24th–25th 2018 – EPCOS 2018 – Catania, Italy – Oral contribution
“Structural and electrical properties of epitaxial Sb_{2+x}Te₃ films on Si(111) substrates”
5. April 17th–21st 2017 – MRS 2017 Spring Meeting – Phoenix, USA – Oral Contribution
“Precise control of the in-plane lattice parameter in Sb_{2+x}Te₃/GeTe superlattices”
6. December 12th–16st 2016 – Materials.it 2016 – Aci Castello (Catania), Italy – Oral Contribution
“Fine tuning of the composition in epitaxial Sb_{2+x}Te₃ films”
7. March 28th–April 1st 2016 – MRS 2016 Spring Meeting – Phoenix, USA – Oral Contribution
“Molecular Beam Epitaxy and Characterization of GeSbTe/Sb₂Te₃ Superlattices”
8. May 11th–15th 2015 – E-MRS 2015 – Lille, France – Oral Contributions
 - (i) “MOCVD growth and structural characterization of In-Sb-Te nanowires”
 - (ii) “Engineering of phonon band gaps in Ge/SiGe superlattices for thermoelectric applications”
9. February 18th–19th 2015 – GiTe 2015 – Milano, Italy – Oral Contribution
“Phonon band gap engineering in Ge/SiGe superlattices”
10. February 19th–20th 2014 – GiTe 2014 – Padova, Italy – Oral Contribution
“The cross-plane thermoelectric properties of p-Ge/SiGe superlattices”
11. September 9th–13th 2013 – Fismat 2013 – Politecnico di Milano, Milano, Italy – Oral contribution
“Ge-rich SiGe Multilayers for Thermoelectric Applications”
12. July 9th–12th 2013 – NN13 – Thessaloniki, Greece – Oral contribution
“Ge-rich SiGe Multilayer Heterostructures for Thermoelectric Applications”
13. February 21st–22nd 2013 – GiTe 2013 – Padova, Italy – Oral Contribution
“Ge-rich SiGe Multilayers for (Some) Thermoelectric Applications: Growth and Characterization”
14. December 13th–14th 2012 – TFTN 2012 Workshop – Linz, Austria – Oral contribution
“Ge/SiGe Superlattices for Thermoelectric Devices grown by LEPECVD”

15. October 16th–18th 2012 – ZeroPower Workshop 2012 – Barcelona, Spain – Oral contribution
“The growth of Thick Ge/SiGe Superlattices for Thermoelectric Applications”
16. July 9th–12th 2012 – ITC-ETC 2012 – Aalborg, Denmark – Oral contribution
“Ge/SiGe Superlattices for Thermoelectric Devices grown by LEPECVD”
17. May 14th–18th 2012 – E-MRS Spring Meeting – Strasburg, France – Oral contribution
“Ge/SiGe Superlattices for Thermoelectric Energy conversion Devices”
18. September 26th–30th 2011 – XCVII Congresso Nazionale SIF – L’Aquila, Italy – Oral contribution
“Optical Spin Injection in SiGe Heterostructures”
19. May 17th–19th 2011 – XX Congresso Nazionale AIV – Padova, Italy – Oral contribution
“Ge/SiGe Superlattices for Thermoelectric Applications”

Posters at conferences and seminars

1. November 20th–21st 2014 – Joint European Non-Volatile Memories Workshop 2014 – Jülich, Germany – Poster
“Nanocrystalline Sb₂Te₃ thin films deposited by MOCVD at 300K”
2. September 26th–29th 2014 – ECT 2014 – Madrid, Spain – Poster
“Nanocrystalline Sb₂Te₃ thin films deposited by MOCVD at 300K”
3. July 13th–17th 2014 – ICMOVPE XVII – Lausanne, Switzerland – Poster
“Self-assembled Ge₁Sb₂Te₄ islands grown on silicon by MOVPE”
4. November 25th–30th 2012 – MRS 2012 Fall – Meeting Boston, USA – Poster
“Ge/SiGe Superlattices for Thermoelectric Energy conversion Devices”
5. September 14th–16th 2011 – GFP 2011 – London, UK – Poster
“Spin Polarized Photoemission from Strained Ge Epilayers Grown by Low-Energy Plasma-enhanced CVD (LEPECVD)”
6. September 11th–16th 2011 – SemiconNano 2011 – Traunkirchen, Austria – Poster
“Spin Polarized Photoemission from Strained Ge Epilayers Grown by low-Energy Plasma-Enhanced CVD (LEPECVD)”

Presentations and Posters at PhD schools

1. February 11th–18th 2012 – 17th International Winterschool on New Developments in Solid State Physics – Mauterndorf, Austria – Poster
“Spin Polarized Photoemission from Strained Ge Epilayers Grown by low-Energy Plasma-Enhanced CVD (LEPECVD)”
2. August 1st–6th 2011 – NiPS Summer School 2011 and Workshop – Perugia, Italy – Oral contribution
“Ge/SiGe Superlattices for Thermoelectric Applications”
3. February 20th–26th 2011 – 6th Optoelectronics and Photonics Winter School – Fai della Paganella, Italy – Poster
“Ge-rich SiGe Heterostructures Grown by Low-Energy Plasma-Enhanced CVD”

Participation to other conferences and seminars

1. June 30th – July 5th 2019 – 69th Lindau Nobel Laureate Meeting – Lindau, Germany
2. July 29th – August 3rd 2012 – ICPS 2012 – Zurich, Switzerland
3. July 3rd-4th 2012 – ZeroPower Workshop 2012 – Glasgow, UK
4. October 26th-27th 2011 – ZeroPower Workshop 2011 – Cork, Ireland
5. June 14th-18th 2010 – ESPS-NIS – Como, Italy