

Curriculum Vitae et Studiorum

Riccardo Cicchi

PERSONAL DETAILS

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SUMMARY

I graduated in Physics in 2003 at the University of Florence with a biophysics thesis focused on the mechanics of a single molecular motor. The study was conducted in the Biophysics Group of the European Laboratory of Non-Linear Spectroscopy (LENS), under the supervision of Prof. Francesco Pavone. I got my PhD in 2007 at the Department of Physics, University of Florence with a thesis titled "Non-linear laser imaging of human skin". Specifically, I designed, developed and used a custom nonlinear microscope for imaging and diagnostics on biological tissues. From 2007 to 2012, I worked as post-doc in the BioPhotonics Group of the European Laboratory of Non-Linear Spectroscopy, where I was in charge of the Biomedical Imaging Team. In 2007, I started working with the Department of Dermatological Sciences of the University of Florence, where I have developed a new optical research laboratory within the dermatological clinic. In the new laboratory, I have developed various optical devices for both skin diagnostics and follow-up of clinical-dermatological therapies. In particular, a compact multi-photon microscope and a multispectral LED dermoscope were developed and successfully tested on patients. In 2008, I won a FABLS project and spent a month in the group of Prof. David Sampson at the University of Western Australia, Perth. In 2010, I participated in an intensive training "Entrepreneurship in Photonics" at the Vrije Universitat in Brussels. Since 2010, I started extending medical collaborations (urologists, general surgeons, ophthalmologists, surgeons and surgeons, neurosurgeons) in order to use optical technologies to meet various medical and clinical needs. In 2012, I obtained a permanent position as a researcher at the National Institute of Optics, National Research Council, where I developed a new BioPhotonic Lab and started a new research group. I am the author of over 80 scientific publications (source: ISI-Web of Science) that have received more than 900 citations. My current H-index is 18 (source: ISI-Web of Science). Currently I am the responsible of the BioPhotonic Group at the National Institute of Optics in Florence and I am associated with LENS, where I am responsible for the Biomedical Imaging Team. My research team develops, in collaboration with various medical experts, optical methods for diagnostics on biological tissues, using a microscopic approach for tissue diagnostics and pathological evaluation and a spectroscopic approach with fiber optic sensors for clinical applications. In addition, the group is also involved in activities oriented towards technology transfer, in collaboration with some local SMEs.

EDUCATIONAL BACKGROUND

- **2010 Intensive Training on “Entrepreneurship in Photonics”**
Vrije Universiteit Brussel, Bruxelles, Belgium
in the activity framework of the European Network of Excellence PHOTONICS4LIFE
- **PhD in Physics (Dottorato di Ricerca in Fisica),**
Gained on 14 February 2007 with the highest mark at:
University of Florence, Department of Physics,
Via G. Sansone, 1, 50019, Sesto Fiorentino, Italy.
Title of the PhD thesis: “*Non-linear laser imaging of human skin*”
- **Master degree in Physics (Laurea in Fisica),**
Gained on 30 September 2003 with mark of 110/110 at:
University of Florence, Department of Physics,
Via G. Sansone, 1, 50019, Sesto Fiorentino, Italy.
Title of the Master Degree thesis: “*Study of the mechanics of a single non-processive molecular motor*”
- **High School (Diploma di maturità scientifica),**
Gained on 18 July 1997 with mark of 60/60 at:
Liceo Scientifico “E. Balducci”, Via Aretina, 30, 50065 Pontassieve, Italy

EMPLOYMENT HISTORY

- Main activities: Development and application of optical technologies to tissue diagnostics.
- Main competences: Optical microscopy, Biophotonics, Tissue imaging, Spectroscopy.

December 2012

Up to now: **Researcher (permanent) at National Institute of Optics – National Research Council**

- Non-linear imaging and multimodal spectroscopy (reflectance - fluorescence - Raman) of human tissues: skin, colon, bladder, cornea, brain.

July 2012

December 2012: **Researcher TD (temporary) at National Institute of Optics – National Research Council**

- Non-linear imaging and multimodal spectroscopy (reflectance - fluorescence - Raman) of human tissues: skin, colon, bladder, cornea, brain.

January 2012

July 2012: **Post-Doc “Assegnista di Ricerca” at LENS (European Laboratory for Non-linear Spectroscopy).**

- Development of a two-color two-photon microscope for in-vivo imaging of small animals.
- Imaging in vivo of melanocytic lesions
- Imaging and spectroscopy (fluorescence - Raman) of human tissues: skin, colon, bladder, cornea, brain

September 2011

December 2011: **Research Collaboration (Collaborazione Coordinata e Continuativa) at LENS (European Laboratory for Non-linear Spectroscopy).**

- Design and development of fibered- and non-fibered LED sources for optical emostasis to be used in the prototype “EMOLED” (in collaboration with Light4Tech Firenze srl) in the framework of the EU project FP7-SME-2008-1-232397 “Light+ter”.

January 2011

September 2011: **Research Collaboration (Collaborazione Coordinata e Continuativa) at LENS (European Laboratory for Non-linear Spectroscopy).**

- Imaging and spectroscopy (fluorescence and Raman) of human tissues; skin, colon, bladder, cornea, brain in the framework of the project “Laser-based biomedical diagnostics” in EU NANOMUBIOP NMP4-SL-2008-211383.

January 2010

December 2010: **Research Collaboration (Collaborazione Coordinata e Continuativa) at LENS (European Laboratory for Non-linear Spectroscopy).**

- In-vivo imaging and spectroscopy of human skin in dermatological applications: non-invasive diagnosis; therapy follow-up; cosmetology in the framework of the project “Imaging laser di tessuti e materiali” (Laser imaging of tissues and materials)

December 2008

December 2009: **Post-Doc “Assegnista di Ricerca” at Department of Physics, University of Florence**

- In-vivo imaging of human skin tissue. In particular, - early diagnosis of cutaneous tumors; - non-invasive follow-up of collagen remodeling after laser photo-rejuvenation therapy.

November 2008:

FABLS fellow at O.B.E.L. (Optical+Biomedical Engineering Laboratory), University of Western Australia under the supervision of Prof. David D. Sampson.

- Morphological and functional imaging of tissues with non-linear optical microscopy and optical coherence tomography.
Title of the project: *Red-Ox imaging of living tissues*

January 2007

October 2008: **Post-Doc “Assegnista di Ricerca” at Department of Physics, University of Florence**

- Designing and building of a compact, portable, custom-made non-linear microscope for in-vivo imaging of human skin.
- Application of non-linear laser microscopy techniques to the detection and characterization of cutaneous tumours and skin pathologies.
- Study of protein-protein interaction in living cells by means of lifetime-based techniques.
- Application of SHG microscopy to the characterization of corneal stroma welded by diode laser.

GRANTS (since 2012)

Project Title	Position	Funding source	Amount	Period
GLIOMICS (Proteomica/genomica/metabolomica per l'individuazione di biomarcatori e lo sviluppo di rivelazione ultrasensibile in fluidi corporei periferici: applicazione al glioblastoma multiforme)	Research Unit Leader (CNR)	Tuscany Region	309.600	2017-2020
PICCOLO (Multimodal highly-sensitive PhotonICs endoscope for improved in-vivo COLOn Cancer diagnosis and clinical decision support)	Team Member	European Commission - H2020	360.000	2017-2019
MetVBadBugs	Team Member	EURAMET – EMPIR 2015	213.840	2016-2019
HBP (Human Brain Project)	Team Member	European Commission	225.000	2016-2018
IMMUNE (Multispectral imaging in the THz and Mid-IR range for the histopathological diagnosis)	Principal Investigator	Ente Cassa di Risparmio di Firenze (local foundation)	30.000	2016-2017
NANOMAX – ITALIAN FLAGSHIP	Team Member	MIUR (Italian Ministry of Research) – Flagship Project	1.383.900	2012-2018
Automated digital scanning and diagnosis of tissues using multimodal non-linear optical microscopy	Principal Investigator	Italian Ministry of Health – Young Investigator	227.273	2014-2017
New optical technologies for the histopathological diagnosis of solid tumors	Principal Investigator	Ente Cassa di Risparmio di Firenze (local foundation)	25.000	2015-2016
LightPatch (LED technology in photo-hemostasis)	Team Member	Biophotonics+: ERANET+ European Commission / Tuscany Region	160.500	2014-2016
LITE (development of advanced imaging techniques for the anterior and posterior eye)	Research Unit Leader	Biophotonics+: ERANET+ European Commission / Tuscany Region	105.000	2014-2016
Diagnostic technology for the post-operative monitoring of pediatric brain tumors	Team Member	Ente Cassa di Risparmio di Pisa (local foundation)	280.000	2013-2016

TEACHING ACTIVITY

Academic Year 2016-2017 – University of Florence

School: Master Course in Molecular Biotechnology (Biotecnologie Molecolari)

Titolo del Corso: Optical Methods in Biology + Lab (Metodi Ottici in Biologia con Laboratorio)

CFU: 3

Academic Year 2015-2016 – University of Florence

School: Master Course in Molecular Biotechnology (Biotecnologie Molecolari)

Titolo del Corso: Optical Methods in Biology + Lab (Metodi Ottici in Biologia con Laboratorio)

CFU: 3

Academic Year 2014-2015 – University of Florence

School: Master Course in Molecular Biotechnology (Biotecnologie Molecolari)

Titolo del Corso: Optical Methods in Biology + Lab (Metodi Ottici in Biologia con Laboratorio)

CFU: 3

Academic Year 2013-2014 – University of Florence

School: Master Course in Molecular Biotechnology (Biotecnologie Molecolari)

Titolo del Corso: Optical Methods in Biology + Lab (Metodi Ottici in Biologia con Laboratorio)

CFU: 3

Academic Year 2012-2013 – University of Florence

School: Master Course in Molecular Biotechnology (Biotecnologie Molecolari)

Titolo del Corso: Optical Methods in Biology + Lab (Metodi Ottici in Biologia con Laboratorio)

CFU: 6

Academic Year 2011-2012 – University of Florence

School: Master Course in Molecular Biotechnology (Biotecnologie Molecolari)

Titolo del Corso: Optical Methods in Biology + Lab (Metodi Ottici in Biologia con Laboratorio)

CFU: 6

SUPERVISED STUDENTS

Bachelor

- Student: Simona Checcucci, Academic Year 2011-2012, Master in Physics, Dept. Physics, University of Florence. Title: “Analysis of brain tissue samples using combined fluorescence-Raman spectroscopy” (Indagine Spettroscopica Combinata Fluorescenza-Raman su Campioni di Tessuto Cerebrale).
- Student: Enrico Baria, Academic Year 2010-2011, Master in Physics, Dept. Physics, University of Florence. Title: “Classification of melanocytic lesions using Raman spectroscopy”.

Master

- Student: Roberta Cecchi, Academic Year 2014-2015, Master in Molecular Biotechnology, Dept. Chemistry, University of Florence. Title: “Characterization of a microRaman spectroscopic system for the classification of biological tissues” (Caratterizzazione di un sistema di micro-spettroscopia Raman destinato alla classificazione dei tessuti biologici).
- Student: Marta Lange, Academic Year 2013-2014, Master in Medical Engineering, Dept. Engineering, Riga Technical University, Riga, Latvia. Co-supervised thesis. Title: “Morpho-Chemistry and Functionality of Diseased Biological Tissues”.

- Student: Enrico Baria, Academic Year 2013-2014, Master in Physics, Dept. Physics, University of Florence. Title: “Development of a multimodal non-linear microscopy platform and its application to the study of arterial tissues” (Sviluppo di una piattaforma microscopica non-lineare multimodale e sua applicazione allo studio dei tessuti arteriosi).
- Student: Cristina Giubani, Academic Year 2012-2013, Master in Molecular Biotechnology, Dept. Chemistry, University of Florence. Title: “Multimodal non-linear microscopy applied to the study of connective tissue in cutaneous lesions” (Microscopia non-lineare multimodale applicata allo studio del tessuto connettivo nelle lesioni cutanee).
- Student: Lucia Conti, Academic Year 2009-2010, Master in Dermatological Sciences, Dept. Dermatology, University “San Raffaele”. Title: “Multiphoton microscopy: a new methodology for non-invasive assessment in the CO₂ fractional photo-rejuvenation” (Il multifotone: nuova metodica di indagine non-invasiva nel fotoringiovanimento con laser CO₂ frazionale).

PhD

- Student: Fatma Zohra Bioud, Academic Year 2012-2013, PhD in Science, University of Aix-Marseille, France. Co-supervised thesis. Title: “Polarization resolved four-wave mixing microscopy: a tool to probe molecular order in biological media”

RELEVANT SKILLS

Scientific skills

- Excellent management skills for research projects (creation of consortia, writing of proposal, project management).
- Large experience in working, following and supervising a scientific project.
- Excellent interpersonal and communicative skills. Experienced in working in an international and interdisciplinary framework, including participation to conferences.
- Relevant experience in presenting scientific results in both oral (lectures, seminars) and written form (project reports, research papers).
- Experienced in organizing seminars and presentation for students.
- Experienced in teaching. “Optical Methods in Biology” – Master course in Molecular Biotechnology, University of Florence.
- Excellent ability in optical design and in mechanical design of optical instruments.
- Good manual skills. Excellent attitude to perform laboratory work, related to mechanics, optics, opto-mechanics and electronics.

Informatics skills

- Experienced in Microsoft Windows operating system and Microsoft-related softwares, and in Linux operating system.
- Experienced in experiment control softwares (LabView development framework), data analysis softwares (MatLab, OriginLab, Microsoft Excel), and image analysis software (ImageJ, CorelDraw Suite).
- Experienced in programming (LabView, MatLab, C).

Language skills

- Italian: mother tongue
- English: good level (written and oral)
- French: good level (written and oral)

PUBLICATIONS**Scientific Publication Summary (2004-2017)**

Number of Publications	Number of Citations	Hirsch index	Source
113	1225	H-index = 22	SCOPUS
89	1048	H-index = 19	ISI - WEB OF SCIENCE

Papers published on international peer-reviewed journals:

1. S. Anand, R. Cicchi, F. Giordano, V. Conti, A. M. Buccoliero, R. Guerrini, and F. S. Pavone, *Multimodal fiber-probe spectroscopy allows detecting epileptogenic focal cortical dysplasia in children*, J. Biophoton. **10**, (2017) DOI 10.1002/jbio.201600136
2. R. Mercatelli, F. Ratto, F. Rossi, F. Tatini, L. Menabuoni, A. Malandrini, R. Nicoletti, R. Pini, F. S. Pavone, and R. Cicchi, *Three-dimensional mapping of the orientation of collagen corneal lamellae in healthy and keratoconic human corneas using SHG microscopy*, J. Biophoton. **10**, 75-83 (2017)
3. R. Cicchi, F. Rossi, D. Alfieri, S. Bacci, F. Tatini, G. De Siena, G. Paroli, R. Pini, and F. S. Pavone, *Observation of an improved healing process in superficial skin wounds after irradiation with a blue-LED haemostatic device*, J. Biophoton. **9**, 645-655 (2016)
4. M. Locatelli, M. Ravaro, S. Bartalini, M. S. Vitiello, R. Cicchi, F. S. Pavone, and P. De Natale, *Real-time terahertz digital holography with a quantum cascade laser*, Sci. Rep. **5**, 13566 (2015)
5. R. Cicchi, E. Baria, C. Matthäus, M. Lange, A. Lattermann, B. R. Brehm, J. Popp, and F. S. Pavone, *Non-linear imaging and characterization of atherosclerotic arterial tissue using combined SHG and FLIM microscopy*, J. Biophoton. **8**, 347-356 (2015)
6. R. Cicchi, D. Kapsokalyvas, and F.S. Pavone, *Clinical Nonlinear Laser Imaging of Human Skin: A Review*, BioMed. Research International **2014**, 903589 (2014)
7. D. Kapsokalyvas, R. Cicchi, N. Bruscano, D. Alfieri, F. Prignano, D. Massi, T. Lotti, and F. S. Pavone, *In-vivo imaging of psoriatic lesions with polarization multispectral dermoscopy and multiphoton microscopy*, Biomed. Opt. Express **5**, 2405-2419 (2014)
8. R. Cicchi, *The New Digital Pathology: Just Say NLO*, Dig. Dis. Sci. **59**, 1347-1348 (2014)
9. C. Matthäus, R. Cicchi, T. Meyer, A. Lattermann, M. Schmitt, B. F. M. Romeike, C. Krafft, B. Dietzek, B. R. Brehm, F. S. Pavone, and Jürgen Popp, *Multimodal nonlinear imaging of atherosclerotic plaques differentiation of triglyceride and cholesterol deposits*, J. Innov. Opt. Health Sci. **7**, 1450027 (2014)
10. R. Cicchi, and F. S. Pavone, *Multimodal nonlinear microscopy: a powerful label-free method for supporting standard diagnostics on biological tissues*, J. Innov. Opt. Health Sci. **7**, 1330008 (2014)
11. R. Cicchi, C. Matthäus, T. Meyer, A. Lattermann, B. Dietzek, B. R. Brehm, J. Popp, and F. S. Pavone, *Characterization of collagen and cholesterol deposition in atherosclerotic arterial tissue using non-linear microscopy*, J. Biophoton. **7**, 135-143 (2014)
12. R. Cicchi, A. Cosci, S. Rossari, D. Kapsokalyvas, E. Baria, V. Maio, D. Massi, V. De Giorgi, N. Pimpinelli, and F. S. Pavone, *Combined fluorescence-Raman spectroscopic setup for the diagnosis of melanocytic lesions*, J. Biophoton. **7**, 86-95 (2014)
13. R. Cicchi, D. Kapsokalyvas, M. Troiano, P. Campolmi, C. Morini, D. Massi, G. Cannarozzo, T. Lotti, and F.S. Pavone, *In vivo non-invasive monitoring of collagen remodelling by two-photon microscopy after micro-ablative fractional laser resurfacing*, J. Biophoton. **7**, 914-925 (2014)
14. R. Cicchi, A. Sturiale, G. Nesi, D. Kapsokalyvas, G. Alemanno, F. Tonelli, and F.S. Pavone, *Multiphoton morpho-functional imaging of healthy colon mucosa, adenomatous polyp and adenocarcinoma*, Biomed. Opt. Express **4**, 1204-1213 (2013)
15. D. Kapsokalyvas, N. Bruscano, D. Alfieri, V. de Giorgi, G. Cannarozzo, R. Cicchi, D. Massi, N. Pimpinelli, and F. S. Pavone, *Spectral morphological analysis of skin lesions with a polarization multispectral dermoscope*, Opt. Express **21**, 4826-4840 (2013)
16. R. Cicchi, N. Vogler, D. Kapsokalyvas, B. Dietzek, J. Popp, and F. S. Pavone, *From molecular structure to tissue architecture: collagen organization probed by SHG microscopy*, J. Biophoton. **6**, 129-142 (2013)

17. P. Matteini, R. Cicchi, F. Ratto, D. Kapsokalyvas, F. Rossi, M. de Angelis, F. S. Pavone, and R. Pini, *Thermal transitions of fibrillar collagen unveiled by second-harmonic generation microscopy of corneal stroma*, *Biophys. J.* **103**, 1179-1187 (2012)
18. F. Vanzi, L. Sacconi, R. Cicchi, and F. S. Pavone, *Protein conformation and molecular order probed by second-harmonic generation microscopy*, *J. Biomed. Opt.* **17**, 060901 (2012)
19. R. Cicchi, and F. S. Pavone, *Non-linear fluorescence lifetime imaging of biological tissues*, *Anal Bioanal Chem* **400**, 2687-2697 (2011)
20. A. Masi, R. Cicchi, A. Carloni, F. S. Pavone, and A. Arcangeli, *Optical methods in the study of protein-protein interactions*, *Adv. Exp. Med. Biol.* **674**, 33-42 (2010)
21. R. Cicchi, A. Crisci, A. Cosci, G. Nesi, D. Kapsokalyvas, S. Giancane, M. Carini, and F. S. Pavone, *Time- and spectral-resolved two-photon imaging of healthy bladder mucosa and carcinoma-in-situ*, *Opt. Express* **18**, 3840-3849 (2010)
22. R. Cicchi, D. Kapsokalyvas, V. De Giorgi, V. Maio, A. Van Wiechen, D. Massi, T. Lotti, and F. S. Pavone, *Scoring of collagen organization in healthy and diseased human dermis by multiphoton microscopy*, *J. Biophoton.* **3**, 34-43 (2010)
23. P. Matteini, F. Ratto, F. Rossi, R. Cicchi, C. Stringari, D. Kapsokalyvas, F. S. Pavone, and R. Pini, *Photothermally-induced disordered patterns of corneal collagen revealed by SHG imaging*, *Opt. Express* **17**, 4868-4878 (2009)
24. V. De Giorgi, D. Massi, S. Sestini, R. Cicchi, F. S. Pavone, and T. Lotti, *Combined non linear- laser imaging (two-photon excitation fluorescence microscopy, fluorescence lifetime imaging microscopy, multispectral multiphoton microscopy) in cutaneous tumours: first experiences*, *J. Eur. Acad. Dermatol. Venereol.* **23**, 314-316 (2009)
25. S. Cabodi, V. Morello, A. Masi, R. Cicchi, C. Broggio, P. DiStefano, E. Brunelli, L. Silengo, F. S. Pavone, A. Arcangeli, E. Turco, G. Tarone, L. Moro, and P. Defilippi, *Convergence of integrins and EGF receptor signaling via PI3K/Akt/FoxO pathway in early gene Egr-1 expression*, *J. Cell. Physiol.* **218**, 294-303 (2009)
26. R. Cicchi, L. Sacconi, A. Jasaitis, R. P. O'Connor, D. Massi, S. Sestini, V. De Giorgi, T. Lotti, and F. S. Pavone, *Multidimensional custom-made non-linear microscope: from ex-vivo to in-vivo imaging*, *Appl. Phys. B* **92**, 359-365 (2008)
27. R. Cicchi, S. Sestini, V. De Giorgi, D. Massi, T. Lotti, and F. S. Pavone, *Non-linear laser imaging of skin lesions*, *J. Biophoton.* **1**, 62-73 (2008)
28. R. Cicchi, D. Massi, S. Sestini, P. Carli, V. De Giorgi, T. Lotti, and F. S. Pavone, *Multidimensional non-linear laser imaging of Basal Cell Carcinoma*, *Opt. Express* **15**, 10135-10148 (2007)
29. M. Capitanio, R. Cicchi, and F. S. Pavone, *Continuous and time-shared multiple optical tweezers for the study of single motor proteins*, *Optics and Lasers in Engineering* **45**, 450-457 (2007)
30. F. Vanzi, M. Capitanio, L. Sacconi, C. Stringari, R. Cicchi, M. Canepari, M. Maffei, N. Piroddi, C. Poggesi, V. Nucciotti, M. Linari, G. Piazzesi, C. Tesi, R. Antolini, V. Lombardi, R. Bottinelli and F.S. Pavone. *New techniques in linear and non-linear laser optics in muscle research*, *J. Muscle Res. Cell Motil.* **27**, 469-479 (2006)
31. M. Capitanio, M. Canepari, P. Cacciafesta, V. Lombardi, R. Cicchi, M. Maffei, F. S. Pavone, and R. Bottinelli, *Two independent mechanical events in the interaction cycle of skeletal muscle myosin with actin*, *Proc. Natl. Acad. Sci. USA* **103**, 87-92 (2006)
32. M. Capitanio, R. Cicchi, and F. S. Pavone, *Position control and optical manipulation for nanotechnology applications*, *Eur. Phys. J. B* **46**, 1-8 (2005)
33. R. Cicchi, F. S. Pavone, D. Massi, and D. D. Sampson, *Contrast and depth enhancement in two-photon microscopy of human skin ex vivo by use of optical clearing agents*, *Opt. Express* **13**, 2337-2344 (2005)
34. M. Capitanio, F. Vanzi, C. Broggio, R. Cicchi, D. Normanno, G. Romano, L. Sacconi, and F. S. Pavone, *Exploring Molecular Motor and Switches at Single-Molecule Level*, *Micr. Res. Tech.* **65**, 194-204 (2004)

Conference Proceedings (“peer-reviewed”, indexed on ISI-Web of Science):

1. F. Rossi, R. Cicchi, G. Magni, F. Tatini, S. Bacci, G. Paroli, D. Alfieri, C. Tripodi, G. De Siena, F. S. Pavone, and R. Pini, *Blue LED induced thermal effects in wound healing: experimental evidence in an in vivo model of superficial abrasions*, *Proceed. SPIE* **10066**, 100660B doi:10.1117/12.2251947 (2017)
2. R. Mercatelli, F. Ratto, F. Tatini, F. Rossi, L. Menabuoni, R. Nicoletti, R. Pini, F. S. Pavone, and R. Cicchi, *Mapping the orientation of corneal sutural lamellae by means of backward-scattered SHG microscopy*, *Proceed. SPIE* **10069**, 100690B doi:10.1117/12.2250895 (2017)
3. S. Anand, R. Cicchi, F. Giordano, A. M. Buccoliero, V. Conti, R. Guerrini, and F. S. Pavone, *Fiber-probe optical spectroscopy discriminates normal brain from focal cortical dysplasia in pediatric subjects*, *Proceed. SPIE* **10050**, 1005005 doi:10.1117/12.2250265 (2017)
4. R. Mercatelli, F. Ratto, F. Tatini, F. Rossi, L. Menabuoni, R. Nicoletti, R. Pini, F. S. Pavone, and R. Cicchi, *Morphological characterization of keratoconus-affected human corneas by SHG imaging and correlation analysis*, *Proceed. SPIE* **9693**, <http://dx.doi.org/10.1117/12.2209618> (2016)

5. E. Baria, R. Cicchi, M. Rotellini, G. Nesi, D. Massi and F. S. Pavone, *Characterization of human arterial tissue affected by atherosclerosis using multimodal nonlinear optical microscopy*, Proceed. SPIE **9712**, <http://dx.doi.org/10.1117/12.2208660> (2016)
6. S. Anand, R. Cicchi, F. Giordano, A. M. Buccoliero, V. Conti, R. Guerrini, and F. S. Pavone, *Probing focal cortical dysplasia in formalin fixed samples using tissue optical spectroscopy*, Proceed. SPIE **9715**, <http://dx.doi.org/10.1117/12.2214649> (2016)
7. R. Cicchi, E. Baria, C. Matthäus, M. Lange, A. Lattermann, B. R. Brehm, J. Popp, and F. S. Pavone, *Characterization of atherosclerotic arterial tissue using combined SHG and FLIM microscopy*, Proceed. SPIE **9536**, 95360N (2015)
8. R. Cicchi, S. Anand, A. Crisci, F. Giordano, S. Rossari, V. De Giorgi, V. Maio, D. Massi, G. Nesi, A. M. Buccoliero, R. Guerrini, N. Pimpinelli, and F. S. Pavone, *Tissue classification and diagnostics using a fiber probe for combined Raman and fluorescence spectroscopy*, Proceed. SPIE **9537**, 95370I (2015)
9. S. Anand, R. Cicchi, A. Cosci, S. Rossari, D. Kapsokalyvas, E. Baria, V. Maio, D. Massi, V. De Giorgi, N. Pimpinelli, and F. S. Pavone, *Fluorescence ratiometric classifier for the detection of skin pathologies*, Proceed. SPIE **9537**, 95371R (2015)
10. F. Rossi, R. Cicchi, F. Tatini, S. Bacci, D. Alfieri, G. De Siena, F. S. Pavone, and R. Pini, *Healing process study in murine skin superficial wounds treated with the blue LED photocoagulator EMOLED*, Proceed. SPIE **9542**, 95420F (2015)
11. S. Anand, R. Cicchi, F. Martelli, F. Giordano, A. M. Buccoliero, R. Guerrini, and F. S. Pavone, *Effects of formalin fixation on tissue optical properties of in-vitro brain samples*, Proceed. SPIE **9321**, 93210Z (2015)
12. R. Cicchi, C. Matthäus, T. Meyer, A. Lattermann, B. Dietzek, B. R. Brehm, J. Popp, and F. S. Pavone, *Non-linear imaging and characterization of atherosclerotic arterial tissue using combined SHG and FLIM microscopy*, Proceed. SPIE **9329**, 932919 (2015)
13. R. Cicchi, S. Anand, S. Rossari, A. Sturiale, F. Giordano, V. De Giorgi, V. Maio, D. Massi, G. Nesi, A. M. Buccoliero, F. Tonelli, R. Guerrini, N. Pimpinelli, and F. S. Pavone, *Tissue classification and diagnostics using a fiber probe for combined Raman and fluorescence spectroscopy*, Proceed. SPIE **9318**, 931808 (2015)
14. R. Cicchi, F. Rossi, F. Tatini, S. Bacci, G. De Siena, D. Alfieri, R. Pini, and F. S. Pavone, *Improvement of the healing process in superficial skin wounds after treatment with EMOLED*, Proceed. SPIE **9303**, 93030E (2015)
15. M. Lange, R. Cicchi, and F. S. Pavone, *Morpho-chemistry and functionality of diseased biological tissues*, Proceed. SPIE **9198**, 919802 (2014)
16. R. Cicchi, S. Anand, S. Rossari, A. Sturiale, F. Giordano, V. De Giorgi, V. Maio, D. Massi, G. Nesi, A. M. Buccoliero, F. Tonelli, R. Guerrini, N. Pimpinelli, and F. S. Pavone, *Non-invasive tissue diagnostics using a multimodal spectroscopic device based on fiber probe*, Proceed. SPIE **9129**, 912932 (2014)
17. S. Anand, R. Cicchi, F. Giordano, A. M. Buccoliero, and F. S. Pavone, *Multimodal Raman-fluorescence spectroscopy of formalin fixed samples is able to discriminate brain tumors from dysplastic tissue*, Proceed. SPIE **9129**, 91293N (2014)
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2. R. Cicchi and F. S. Pavone, Multimodal Morphochemical Tissue Imaging, Chap. 5 in “Ex-vivo and In-vivo Optical Molecular Pathology”, Ed. J. Popp, Wiley-Blackwell (2014)
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PARTECIPATION TO CONFERENCES, MEETINGS and SCHOOLS

Invited talks:

1. R. Cicchi, S. Anand, A. Crisci, F. Giordano, S. Rossari, V. De Giorgi, V. Maio, D. Massi, G. Nesi, A. M. Buccoliero, R. Guerrini, N. Pimpinelli, and F. S. Pavone, *Tissue classification and diagnostics using a fiber probe for combined Raman and fluorescence spectroscopy*, (Invited talk), European Conference on Biomedical Optics ECBO 2015 – Monaco di Baviera, Germania
2. R. Cicchi, S. Rossari, A. Crisci, F. Giordano, V. De Giorgi, V. Maio, D. Massi, G. Nesi, A. M. Buccoliero, M. Carini, R. Guerrini, N. Pimpinelli, and F. S. Pavone, *Multimodal spectroscopy for tissue diagnostics: a combined Raman-fluorescence approach*, (Invited talk), Congresso Annuale AEIT – FOTONICA2014, Napoli, 2014
3. R. Cicchi, D. Massi, V. De Giorgi, S. Sestini, T. Lotti, and F. S. Pavone, *Non-linear imaging of skin lesions*, (Invited talk), Congresso annuale Associazione Italiana Diagnostica Non Invasiva in Dermatologia (AIDNID), Napoli 2009
4. R. Cicchi, D. Massi, F.S. Pavone, and D.D. Sampson, *Diffusion of Optical Clearing Agents in Skin Studied by Two-Photon Microscopy* (Invited talk), Saratov Fall Meeting 2005, Saratov, Russia, 2005

Talks:

1. R. Mercatelli, F. Ratto, F. Rossi, L. Menabuoni, A. Malandrini, F. Tatini, R. Nicoletti, R. Pini, F. S. Pavone, and R. Cicchi, *Mapping the orientation of corneal sutural lamellae by means of backward-scattered SHG microscopy*, International conference on Biomedical Optics BIOS2017, San Francisco, CA, US, 2017
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3. S. Anand, R. Cicchi, R. Fantechi, M. Gacci, G. Nesi, M. Carini, and F.S. Pavone, *Multimodal fiber-probe spectroscopy for the diagnostics and classification of bladder tumors*, International conference on Biomedical Optics BIOS2017, San Francisco, CA, US, 2017
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5. S. Anand, R. Cicchi, F. Giordano, V. Conti, A.M. Buccoliero, R. Guerrini, and F.S. Pavone, *Fiber-probe optical spectroscopy discriminates normal brain from focal cortical dysplasia in pediatric subjects*, International conference on Biomedical Optics BIOS2017, San Francisco, CA, US, 2017
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7. E. Baria, R. Cicchi, M. Rotellini, G. Nesi, D. Massi and F. S. Pavone, *Characterization of human arterial tissue affected by atherosclerosis using multimodal nonlinear optical microscopy*, International conference on Biomedical Optics BIOS2014, San Francisco, CA, US, 2016
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17. R. Cicchi, *Multispectral polarization dermoscope: a tool for studying the vascular pattern of tissues*, IL PIANETA CRRT, Licciana Nardi, Italy
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4. S. Anand, R. Cicchi, F. Giordano, A. M. Buccoliero, and F. S. Pavone, *Multimodal Raman-fluorescence spectroscopy of formalin fixed samples is able to discriminate brain tumors from dysplastic tissue*, International conference Photonics Europe 2014, Bruxelles, Belgium, 2014
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19. R. Cicchi, D. Massi, D.D. Sampson and F.S. Pavone, *Contrast enhancement in two photon microscopy imaging of human dermis by use of optical clearing agents*, MMD Meeting 2005, Genova, Italy, 2005

REVIEWER ACTIVITY

I work as a reviewer for the following international scientific journals:

- Nature - Scientific Reports
- Journal of Biophotonics
- Journal of Biomedical Optics
- Optics Express
- Biomedical Optics Express
- Biophysical Journal
- Plos One
- Scanning
- Lasers in Surgery and Medicine
- Journal of Microscopy
- Journal of Biomechanics
- Analytical and Bioanalytical Chemistry
- Digestive Disease and Science