

Orazio Svelto: curriculum vitae



Personal Information

- Family name: Svelto. First name: Orazio
- Born in Maglie (Italy) on February 21 1936
- Married with two sons
- Address: Dipartimento di Fisica, Politecnico di Milano, Piazza Leonardo da Vinci 32, Milan (Italy)
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Academic Career and Research Organization

- He received the degree in Nuclear Engineering at Politecnico di Milano in 1960.
- In the years 1961-1963 he was Research Associate with the Microwave Laboratory at Stanford University (Stanford, California, USA) with a fellowship of Italian National Research Council (CNR), under the supervision of Prof. R.H. Pantell, A.E. Siegman and A.L. Schawlow.
- From 1963 to 1976 he was a staff member of the Italian CNR, first as a Researcher, then as Head of Research and then as a Research Director.
- In 1966 he received the degree “Libera Docenza” in Quantum Electronics, confirmed in 1972
- From 1976-2010 he was full professor first of Quantum Electronics (the first chair established in Italy) and then of Physics of Matter.
- Since November 2010 he is retired and was named “Emeritus Professor” from the Italian Minister of University and Research.
- In 1976, he promoted the establishment, by the Italian CNR, of the “Center for Quantum Electronics and Electronics Instrumentation”. The Center was directed by Svelto during all its, 24 years, lifetime (1976-2000)

- In 2000, under the fundamental action by Svelto, this Center was transformed into the “Institute for Photonics and Nanotechnologies” of the Italian CNR, with headquarter in Milan. Besides the main section in Milan, the Institute now consists of five branch sections, located in Bari, Rome, Lecco, Padua, and Trento. The personnel is presently composed of 45 staff researchers, 95 associated researchers (from the universities), and a number (~50) of post-doctoral fellows and phd students

Research Activity

The research performed by Dr. Svelto has covered a wide range of activity in the field of Laser Physics and Photonics, starting from the early beginning (1961) of these disciplines. This activity includes ultrashort-pulse generation and applications, physics of laser resonators and techniques of mode selection, laser applications in biology and biomedicine, and physics of solid-state lasers.

Orazio Svelto has published around 200 scientific papers on peer-reviewed international journals. These papers have received approximately 11,000 citation with an h-index of 41 (Google Scholar). In particular:

- He is the inventor of super-gaussian mirrors for diffraction limited lasers exploiting unstable resonators (1988) [1, 2]. This kind of laser is still often used in commercially available lamp-pumped solid-state lasers.
- He is the inventor of CW diode-pumped Yb:Er:glass laser, often used for eye-safe optical measurements and communications (1991) [3, 4].
- Lastly, and perhaps most importantly, he is also the inventor of the hollow-fiber compressor (1996) [5 (~ 1,200 Google Scholar citations), 6 (~ 1,200 Google Scholar citations)], a milestone for the generation of near-single cycle optical pulses of high intensity. This solution is often adopted at many laboratories world-wide dealing with attosecond sciences.
- He is the author of the book “Principles of Lasers”, presently at its fifth edition [7, (~ 4,000 Google Scholar citations)]. In its various editions, the book has been translated in Russian, Chinese, Greek, Arabic and Farsi languages and it is widely used at several universities world wide.

Books

- 1996. “Ultrafast Processes in Spectroscopy” (Plenum Press, New York). Co-editor
- 2001. “Problems in Laser Physics” (Plenum Press, New York). Co-author
- 2002. “Superstrong Fields in Plasmas” (American Institute of Physics, Melville, N.Y.). Co-editor
- 2010. “Principles of Lasers”, fifth Edition (Springer, New York). Author

Chair of International conferences

He served as a Program Chairman, Conference Chairman or Honorary Chairman at several international conferences. Notably:

- 1976. IX International Quantum Electronics Conference, Amsterdam. Elected program chair of conference, the first one, of this series, organized in Europe.
- 1985. *Conference on Lasers and Electrooptics* (CLEO), Baltimore, USA. Chair of the European Program Committee
- 1991. *Conference on Lasers and Electrooptics* (CLEO), Baltimore, USA. Chair of the European Program Committee

- 1994. CLEO-Europe Conference, Amsterdam. General co-chair of the first Conference of this series
- 2002. International Quantum Electronics Conference, Moscow. Program co-Chair.
- 2004. International Symposium on “Ultrafast Intense Laser Science 3”, Palermo, Honorary Chair

Awards and Recognitions

- 1967. “Angelo Barbagelata” Prize of the Italian AEI (Associazione Elettrotecnica Italiana)
- 1969. Prize “Sicilia” for Physics for works done on the Physics of Ruby Lasers
- 1985. Prize “Gioia” from his original town Gioia del Colle (BA)
- 1985-1994. Nominated, as Representative of the Minister of University and of Scientific and Technological Research, to the “Consiglio Superiore delle Poste, delle Telecomunicazioni e dell’Automazione”
- 1989. Elected Member of the “Istituto Lombardo Accademia di Scienze e Lettere”
- 1991. Elected Member of the “Accademia Nazionale delle Scienze detta dei XL”
- 1991. Prize of Borgia Foundation, given by Accademia dei Lincei, for the invention of the super-Gaussian mirrors
- 1992. Philip Morris Prize for Science and Technology for the invention of the Erbium-Ytterbium for optical communications
- 1993. Elected Fellow of the Institute of Electrical and Electronics Engineers (IEEE)
- 1997-2000. Director at Large and Member of the International Council of the Optical Society of America
- 1998. Quantum Electronics Prize of the European Physical Society: *“For pioneering and outstanding continuing activities in the fields of ultrashort laser pulses and solid-state lasers”*
- 1999. “Sergio Panizza” Prize of the Italian Physical Society for Optoelectronics
- 1999. Elected Fellow of the Optical Society of America (OSA)
- 2000. ITALGAS Prize for Research and Technological Innovation for “New Lasers for Optical Communicatons”
- 2000. Performed expert work for the Nobel Committee of Physics of the Swedish Royal Academy of Science; on account of the work performed, he was then invited by the Nobel Foundation to attend the Nobel Ceremony (the so-called Nobel week) of that year.
- 2004. Elected member of the “Accademia Nazionale dei Lincei”, the most important Italian Academy for Science and Culture.
- 2004. Nominated “Honorary Citizen” of his original town, Gioia del Colle (BA)
- 2005. Charles H. Townes Award of the Optical Society of America: *“For pioneering works on ultrashort laser pulses and solid-state lasers and for the invention of the hollow-fiber compressor, leading to advances in extreme nonlinear optics and attosecond science”*
- 2005. Gold medal of Italian President of Republic for well deserving people in School, Culture and Art: *“One of the Italian pioneers in Laser Physics. Researcher of extremely high level. Point of reference of the entire scientific community”*
- 2005. Prize “Ape d’Oro” from Comune di Segrate, his home residence
- 2006-2012. Member of the Scientific Advisory Board for the Max Planck Institute for the Science of Light (Erlangen, Germany)
- 2006-2012. Representative of the Minister of University and Scientific Research in the Scientific Council of the “Istituto Nazionale per la Ricerca Metrologica”

- 2009. Honorary Member of the “Italian High-Tech Network in Dermatological Sciences”
- 2009-2016. Member of the International Giury for the International Prize “Leibinger Innovation Prize”
- 2009. Honorary Member of the “Italian High-Tech Network in Dermatological Sciences”
- 2010. Honorary Member of the SIOF (Società Italiana di Ottica e Fotonica)
- 2010. Invited as one of the 10 speakers at the special symposium “Retrospectives on the Invention of the Laser”. The symposium was held during the international Conference CLEO 2010 (San José, CA, May 17 2010) to celebrate the 50th anniversary of the laser and was featuring other 5 laser pioneers, 3 Nobel Laureates, and 1 historian.
- 2011. Honorary Member of the Italian Society for Surgical and Oncologic Dermatology
- 2011. Julis Springer Prize for Applied Physics: *“for his pioneering long-lasting and innovative works in the field of Lasers and Optics”*
- 2018. Invited by the Nobel Laureate Gérard Mourou, as his personal guest, to attend the Nobel Ceremony (the so-called Nobel week) of that year

References

- [1] S. De Silvestri, P. Laporta, V. Magni, O. Svelto and V. Majocchi "Unstable Laser Resonators with Supergaussian Mirrors" *Opt. Letters*, 13, 201 (1988)
- [2] S. De Silvestri, V. Magni, O. Svelto and L. Valentini "Lasers with super-Gaussian Mirrors" *IEEE J. Quant. Electr.*, QU-26, 1500-1509 (1990)
- [3] P. Laporta, S. De Silvestri, V. Magni and O. Svelto "Diode-pumped CW Bulk Er:Yb:Glass Laser" *Optics Lett.* 16, 1952 (1991)
- [4] S. Taccheo, P. Laporta, S. Longhi, C. Svelto, O. Svelto "Diode-Pumped Bulk Erbium-Ytterbium Lasers" *Appl. Phys. B*, 63, 425-436 (1996)
- [5] M. Nisoli, S. De Silvestri, O. Svelto "Generation of High Energy 10 fs Pulses by a New Pulse Compression Technique" *Appl. Phys. Letters*, 68, 2793-2795 (1996)
- [6] M. Nisoli, S. De Silvestri, O. Svelto, R. Szipocz, K. Ferencz, Ch. Spielmann, S. Sartania, F. Krausz "Compression of High Energy Laser Pulses below 5 fs" *Opt. Letters*, 22, 522-524 (1997)
- [7] Orazio Svelto, "Principles of Lasers", fifth edition, Springer New York, 2010