

Antonio Selva (1936 - 2007)



The scientific community recently suffered the loss of Antonio Selva, suddenly deceased on October 30, 2007 in Novara, the city he was living in, at the age of 71.
Antonio Selva was one of the key persons of Mass Spectrometry in Italy.

In the pioneering years of MS, his scientific activity and his achievements provided fundamental contribution to the diffusion of MS in Italy as one of the cardinal investigation methods in Chemistry.

Antonio Selva graduated in Industrial Chemistry at the University of Milano in 1961 and immediately started research activity at the Institute of Chemistry of Politecnico di Milano.

His first researches were founded by the Italian pharmaceutical company Farmitalia-Carlo Erba, at that time involved in the discovery, characterization and testing of novel antitumorals, such as adriamycine, doxorubicine and neoauriothine.

The early years of Antonio Selva's scientific work were strongly oriented towards organic chemistry. He had the opportunity of collaborating with some of the most representative names of the Italian chemical research, such as Adolfo Quilico, Luciano Caglioti, Achille Umani Ronchi, Cesare Cardani and Francesco Minisci.

1st publication

L. Caglioti, G. Cainelli, A. Selva. "Nuovo metodo per ottenere olefine da chetoni α - β insaturi- α - β -sostituiti." La Chimica e l'Industria, 44, 36 (1962).

Along with the use of mass spectrometry as structural tool, his interest soon focused on gas-phase ion chemistry, fragmentation mechanisms, metastable ions decomposition.

In 1965 he joined the Italian National Research Council (CNR) at the Centre for Organic Natural Products, and then he moved to ETH in Zürich to work in Prof. J. Seibl laboratory and to Perkin Elmer application laboratories in Norwalk (Connect. USA).

Back in homeland, he established the Laboratory of Mass Spectrometry at the Politecnico di Milano. The laboratory was equipped with one the first double sector instruments in Italy, the Hitachi - Perkin Elmer RMU 6-D,



and, some years later, with a VG Micromass Zab 2F machine, soon equipped with field desorption ionization source, at that time innovative ionization method for non-volatile substrates.



In the period 1967-1992, Antonio Selva gave significant contribution to different research lines including: synthetic heterocycles fragmentation patterns, gas phase rearrangements of substituted ketones and quinones, exploitation of MIKE spectra for fragmentation assignment, structure elucidation of organic natural compounds. Among the latter, it is worthy to mention his studies on carotenoids, some of them in collaboration with George Britton of the University of Liverpool. Starting from the late '80s, Antonio Selva interests moved progressively towards macrocyclic chemistry and non-covalent interactions. Noticeably, he was co-author, along with Piero Traldi, of two papers on novel macropolycycles synthesized by the group of Nobel Prize winner J.-M. Lehn.

E. Constantin, F. Kotzyba-Hibert, J. M. Lehn, N. Saigo, A. Selva and P. Traldi. "On the characterization and identification of a new type of macropolycycle by mass spectrometry." *Org. Mass Spectrom.*, 18, 84 (1983).

E. Constantin, F. Kotzyba-Hibert, J. M. Lehn, K. Saigo, A. Selva and P. Traldi. "Electron impact mass spectra of a new type of macropolycycle." *Org. Mass Spectrom.*, 17, 651 (1982).

During the last ten years before his retirement (2004), he mainly studied the gas-phase structure of inclusion complexes of cyclodextrin with biologically active guest molecules, mainly pharmaceutical compounds, giving relevant contribution to host-guest chemistry in the gas phase.

Selected Publications: Natural Compounds

L. Caglioti, G. C. Ainelli, B. C. Amerino, R. Mondelli, A. Prieto, A. Quilico, T. Salvatori and A. Selva. "The structure of trisporic-C acid." *Tetrahedron, Supplement No.7*, 175 (1966).

C. Cardani, D. Ghiringhelli, A. Quilico and A. Selva. "The structure of pederone, a novel substance from *Paederus* (Coleoptera Staphylinidae)." *Tetrahedron Letters*, 4023 (1967).

A. Selva, A. Arnone, R. Mondelli, L. Ceraulo, S. Petruso, S. P. Ilescia and L. Lamartina. "Cardopatine and Isocardopatine, two novel substances from *Cardopatum corymbosum*." *Phytochemistry*, 17, 2097 (1978).

A. Selva, F. Ferrario and P. Ventura. "Water loss from trans-sobrerol under acidic conditions in the gas-phase. Correlations with the acid-catalysed synthetic process in the condensed phase." *Org. Mass Spectrom.*, 23, 677

(1988).

F. Cardini, G. Britton and A. Selva. "A seco-carotenoid from leaves of two Cycads." *Phytochemistry*, 28, 2793 (1989).

Selected publications: Reaction Mechanisms and Rearrangements

F. Minisci, M. Cecere, R. Galli and A. Selva. "New syntheses of polyfunctional long-chain compounds by alternating free radical additions to conjugated olefins." *Organic Preparations and Procedures*, 1, 11 (1969).

E. Constantin, F. Kotzyba-Hibert, J. M. Lehn, K. Saigo, A. Selva and P. Traldi. "Electron impact mass spectra of a new type of macropolycycle." *Org. Mass Spectrom.*, 17, 651 (1982).

K. Vekey, D. M. F. Edwards, L. F. Zerilli, M. Mak, J. Tamas, V. Raverdino and A. Selva. "Comparison of mass spectrometric methods for studying thermally labile compounds: rifapentine." *Org. Mass Spectrom.*, 25, 465 (1990).

A. Selva, E. Redenti, G. Amari and P. Ventura. "Differentiation of diastereomeric aminotetralins by metastable ion spectra of 2-oxazolidinone derivatives upon electron-impact ionization." *Org. Mass Spectrom.*, 27, 63 (1992).

Host-guest chemistry

A. Selva, E. Redenti, M. Pasini, P. Ventura and B. Casetta. "Study of the salts with organic hydroxy acids of the terfenadine b-cyclodextrin inclusion complex in solution by ionspray mass spectrometry." *J. Mass Spectrom.*, 30, 219 (1995).

A. Mele and A. Selva. "Detection of 1:1 adducts of piroxicam with b-cyclodextrin or maltohexaose by fast atom bombardment mass spectrometry." *J. Mass Spectrom.*, 30, 645 (1995).

A. Mele, W. Panzeri, A. Selva and E. Canu. "Ready detection of b-carotene from large aggregates of cyclodextrins complexes in water solution by laser desorption/ionization mass spectrometry with and without matrix assistance." *Eur. J. Mass Spectrom.*, 5, 7 (1999).

A. Mele, W. Panzeri, A. Selva and P. Mauri. "Fast atom bombardment, electrospray, ionspray and tandem mass spectrometry of 1:1 b-cyclodextrin/5-methoxytryptamine hydrochloride host-guest complex: host protonation and fragmentation due to guest deamination." *Eur. J. Mass Spectrom.*, 6, 169 (2000).

Last publication

A. Mele, G. Raffaini, F. Ganazzoli, A. Selva " b-Cyclodextrin and 5- Methoxytryptammonium Ion. Host-Guest Association in vacuo: Simulation of Non-covalent Inclusion by Molecular Dynamics" *J. Incl. Phenom. Macrocyc. Chem.*, 44, 219 (2002).

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