

Professor Arlette Solladié-Cavallo

A Tribute



Writing a tribute to Professor Arlette Solladié-Cavallo on the occasion of her 70th birthday fills us with great honor and happiness. Arlette Solladié-Cavallo was born in Nice, France, in 1938. She graduated from Montpellier University (chemistry and physics) in 1961 and in the same year earned a Research Engineering degree from Ecole Nationale Supérieures de Chimie de Montpellier and a position of Attachée de Recherches at CNRS. She defended her PhD thesis in 1967 in the field of physical organic chemistry with Professor P. Vièles (known for his spontaneous resolution of lactyl diamides). After one year postdoc at Stanford in 1968 with Professor J.I. Braumann ('basicity in the gas phase'), she returned to Montpellier to the position of Chargée de Recherches at CNRS (1969). In 1970 she gave birth to Nathalie (who is following the career of her parents as an excellent organic chemist). The family then moved to Strasbourg at the Ecole Nationale Supérieure de Chimie, which became later ECPM. Arlette Solladié-Cavallo in collaboration with her husband, Professor Guy Solladié (well known for chiral sulfoxide chemistry) built the Département de Chimie Organique Fine and was in charge of the basic course of 'Molecular topology using spectroscopy (IR and NMR)'. In 1982 she was promoted Directeur de Recherches at CNRS and her group was named 'Laboratoire de Stéréochimie Organométallique'.

Professor Arlette Solladié-Cavallo's scientific opus reveals her strong and persistent interest in the stereochemistry of organic and organometallic compounds and the use of spectroscopic methods for structure determination (NMR, IR, CD, VCD, *in silico* modelization/calculation). She cooperated with world known experts in the field and was able to use state-of-the-art methods and instruments. A considerable part of her fruitful scientific career was devoted to utilization of chiral arene-chromium-carbonyl complexes in asymmetric synthesis, mainly for resolution of aldehydes and also to preparation of unnatural aminoacids *via* chiral imines of glycine. Her work in the field of chiral sulfonium salts and corresponding chiral sulfur ylids

enabled asymmetric syntheses of various aziridines, epoxides and cyclopropanes with excellent enantiomeric purity. Moreover, the use of phosphazene bases in these reactions produced extremely reactive chiral ylids and thus shortened reaction times to minutes.

During her outstanding scientific and teaching career Arlette Solladié-Cavallo published more than 135 papers in highly reputable international chemistry journals, 4 book chapters, supervised 27 PhD theses and more than 50 Masters. She gave more than 140 invited lectures all over the world (Canada, China, Europe, Japan, USA) in Universities, Companies or at International Meetings. She was visiting professor at KTH-Stockholm, Potenza-Italy, Bratislava-Slovakia and research associate at Florida State University (USA) and la Sapienza (Rome-Italy) where she delivered courses for Masters and PhD students in the field of chirality, spectroscopy and asymmetric synthesis. She is a member of the chemical societies of France, Japan, Switzerland and United states. She was Associate Editor of *ENANTIOMER*, has received an award from the 'Swedish Research Council for Engineering Sciences' and two medals from Universities (Bronze in Comenius University in Bratislava-Slovakia and Silver in Pisa-Italy) for outstanding teaching.

Privately, Arlette is an extremely kind and considerate person, very open and dynamic, with a good sense of humor, always concerned about the harmonious atmosphere among the people in her international group. Beside French undergraduates, PhD students and post-docs, there were usually people from many different countries who were ready to help each other in solving research and everyday problems. Everyday discussions about chemistry and other topics were usually conducted in a dynamic and friendly atmosphere during coffee time in a special corner of the department. Generations of her students will surely remember her sparkling, contagiously optimistic and encouraging approach to any chemistry problem, sometimes even making her a bench chemist again for a while. She has a natural talent for drawing (not surprisingly in 1955 she received "Prix de la Société des Beaux Arts" in drawing) making her stereochemical explanations outstandingly clear and visually superb.

We are sure that all former students, colleagues and friends would like to join us in wishing "ad multos annos" to Arlette. Enjoy your new hobbies concerning archeology, traveling etc....

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Selected Publications

Physical chemistry and spectroscopy

1. Contribution à l'étude de quelques composés se rattachant aux séries oxy et thiodiacétique. III: pK, Δ pK et structure, micro-constantes. A. Solladié-Cavallo et P. Vièles, *J. Chim. Phys.* **1967**, *64*, 1593.
2. Contribution à l'étude de quelques composés se rattachant aux séries oxy et thiodiacétique. II. Non-équivalence magnétique et études conformationnelles. A. Solladié-Cavallo, *Bull. Soc. Chim.* **1968**, 437.
3. Aspects récents dans l'étude des réactions ions-molécules par résonance ionique en cyclotron. A. Solladié-Cavallo ; *Super Chémia*, ENSCM **1971**.
4. Résonance magnétique nucléaire du proton: identification des diastéréoisomères méso et dl dans les amines secondaires par création d'un centre pseudo-asymétrique sur l'azote. A. Solladié-Cavallo et G. Solladié, *C.R. Acad. Sc.* **1972**, *275*, 1053.
5. Détermination de la pureté énantiomérique de β -hydroxyesters partiellement actifs par RMN. Utilisation du tris(trifluorométhylhydroxyméthylène)-3 camphorato-d Europium III. E.B. Dongala, A. Solladié-Cavallo et G. Solladié, *Tetrahedron Lett.* **1972**, 4233.
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7. Atropisomerism : Racemization Barrier of 13-substituted oxyprotoberberines. A. Solladié-Cavallo, J.F. Stambach and L. Yung, *Org. Magn. Res.* **1981**, *17*, 303.
8. iso-Propyl Phenylacetate : Formation of a single enolate with tBuP4 as Base. A. Solladié-Cavallo, T. Liptaj, M. Schmitt and A. Solgady; *Tetrahedron Lett.* **2002**, *43*, 415-418.

Fluorinated Compunds

9. Synthesis of (+)S- α -perfluoroethyl- α -hydroxyphenyl acetic acid and highly effective auxiliaries for use in asymmetric induction. A. Solladié-Cavallo and J. Suffert, *Tetrahedron Lett.* **1984**, *25*, 1897.
10. Asymmetric addition of perfluoroalkyl groups on carbonyls with zinc and ultrasound. A. Solladié-Cavallo, D. Farkhani, S. Fritz, T. Lazrak and J. Suffert, *Tetrahedron Lett.* **1984**, *25*, 4117.
11. Synthesis of some optically pure perfluoroalkyl carbinols. A. Solladié-Cavallo and J. Suffert, *Synthesis* **1985**, 659.
12. o-trifluoromethyl benzaldehyde-chromium-tricarbonyl; a new chiral complex : synthesis, resolution and perfluoroalkylation. A. Solladié-Cavallo, D. Farkhani, A.C. Dreyfus and F. Sanch, *Bull. Soc. Chim.* **1986**, 906.

13. o-Fluorobenzaldehyde-chromium-tricarbonyl: a new chiral complex for highly diastereoselective nucleophilic additions. A. Solladié-Cavallo and M. Bencheqroun, *J. Organomet. Chem.* **1991**, 403, 159.

Chiral Arene-tricarbonyl complexes

14. Chiral Arene-tricarbonyl-chromium complexes: resolution of aldehydes. A. Solladié-Cavallo, G. Solladié et E. Tsamo, *J. Org. Chem.* **1979**, 44,4189 and; *Inorganic Synthesis*; Ed. S. Krischner, vol. 23, p.85, **1985** (John Wiley & Sons)
15. Importance de la conformation des complexes $\text{XC}_6\text{H}_5\text{Cr}(\text{CO})_3$ pour la régiosélectivité d'additions nucléophiles sur le cycle aromatique. A. Solladié-Cavallo et G. Wipff, *Tetrahedron Lett.* **1980**, 3047.
16. Arene-Chromium-tricarbonyl complexes: Bonding and Behaviour. A. Solladié-Cavallo; *Polyhedron Report* N° 11, Polyhedron **1985**, 4, 901.
17. Enantioselective synthesis of chiral benzylic amines (a stereospecific transamination-alkylation reaction). A. Solladié-Cavallo and D. Farkhani, *Tetrahedron Lett.* **1986**, 27, 1331.
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20. Chiral Arene-chromium-tricarbonyl complexes: a 2-step Synthesis of Halostachin analogues". A. Solladié-Cavallo and M. Bencheqroun, *J. Organomet. Chem.* **1991**, 406, C15.
21. Arene-chromium-carbonyl complexes in the synthesis of optically active chiral substances. A. Solladié-Cavallo; *Trends in Organic Chemistry*; Ed. Menon **1992**, Vol.1, 237-256.

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23. Enantioselective synthesis of optically pure natural S(+) or unnatural R(-) DABA. A. Solladie-Cavallo and M.C. Simon, *Tetrahedron Lett.* **1989**, 30, 6011.
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29. Diastereoselective Alkylation of 8-phenylmenthyl phenylacetate: Aggregated lithium enolate versus naked enolate. A. Solladié-Cavallo, A. G. Csaky, I. Gatz, J. Suffert, *J. Org. Chem.* **1994**, *59*, 5343-5346.
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Syntheses of epoxides and cyclopropanes via chiral sulfur-ylides

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Epoxidation via chiral dioxiranes

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53. Enantioselective Heterogeneous Catalytic Hydrogenation of Keto-esters over Pt/Al₂O₃: Using New Chiral Modifiers. Arlette Solladié-Cavallo, Khalid Azyat, Jana Raschmanova and François Garin *Tetrahedron Lett.* in course.