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In memory of Jean-Louis Luche

Jean Louis (Picture 1) passed away on March 24th 2014 aged 73. He was one of the founders of the European Society of Sonochemistry and as its first secretary was instrumental in setting up the original rules of our society. This Special Edition is dedicated to his memory.

Jean-Louis earned his doctorate degree in organic chemistry under the supervision of a famous French chemist, Henri Kagan, a pioneer in the field of asymmetric catalysis and currently emeritus professor at the University of Paris Sud-Orsay. In his early research Jean-Louis was involved in synthetic organic chemistry and in 1978 he published an article entitled “Lanthanides in organic chemistry 1: Selective 1,2 reductions of conjugated ketones” a reaction which has become known as the Luche Reduction [1]. The reaction is used to convert an α,β -unsaturated ketone to an allylic alcohol using cerium trichloride, sodium borohydride, and an alcohol solvent.

It is however with sonochemistry that his name will forever be linked. Along with numerous students and co-workers in French universities and abroad, his first contributions involved the applications of ultrasound to organic and organometallic chemistry. He was one of the pioneers of this “new” science in the 1980’s while based in Grenoble at Joseph Fourier University. He was one of the speakers at the very first Sonochemistry Symposium held as part of the Royal Society of Chemistry meeting at Warwick University, UK, April 1986 (Picture 2) [2]. The following year he was involved in the organisation of a EUCHEM Conference “Unusual Methodologies in Synthetic Chemistry” held in Aussois, France. This meeting was very significant in the development of sonochemistry. It brought together groups interested in a range of high energy processes including pressure, temperature and microwaves. It was the forerunner of the EU COST programmes involving sonochemistry and it was here that the idea for the formation of a European Society of Sonochemistry was first discussed.

The following years saw many publications and seminars on sonochemistry and the next major international gathering was a session at Ultrasonics International July 3–7 1989 Madrid (Picture 3). In October of the following year there was the first meeting of the European Society of Sonochemistry organised by Jean-Louis and others in Autrans, France (Picture 4). However the more formal establishment of officers and constitution came at the second ESS meeting held at Gargnano, Italy in September 1991 (Picture 5). He received the silver medal of CNRS in 1991. I am grateful to Pedro Cintas and Jean-Marc Leveque for tracing the citation for the CNRS silver medal award to Jean-Louis Luche and to Jean-Marc for translating it from the original French. The citation reads:

Two major thematic periods have occupied sequentially the scientific activity of Jean-Louis Luche who graduated with a PhD in 1968.

The first period starts in the College Of France with Professor Henri Kagan, then continues at Grenoble with Professor P. Crabbe. This period is devoted to organic synthesis, particularly to the synthesis and the stereochemistry of β -lactams by the Reformatsky reaction of imines and to the stereochemistry of organometallic reactions. In the second period, Jean-Louis focuses more on activation methods in synthesis and undertakes developing new methods of unconventional synthesis. From flash thermolysis to graphite insertion compounds as well as the use of lanthanide reagents in organic synthesis, he started sonochemistry research in 1980 by discovering the fantastic acceleration of the Grignard reaction under the action of ultrasound.

He is the author of more than a hundred of publications and has lectured extensively.

Jean-Louis devoted extensive efforts to the theoretical approach of sonochemistry, fundamental work if one wants to understand and predict the effects of ultrasound. He attempted to demonstrate that sonochemistry is not a simple technique but a new discipline.

His career is marked by great dynamism, a curious and inventive mind, ignoring any discomfort that his views might cause. It is nice to greet him as a pioneer of sonochemistry, the current progress and success have justified its rejection of classicism.



Picture 1. Jean-Louis Luche.



Picture 2. Speakers at the first international symposium on Sonochemistry. *Front row* (left to right): R. Verrall, University of Saskatchewan, Canada; A. Henglein, Hahn-Meitner-Institut, Berlin, Germany; T.J. Mason, Coventry Polytechnic, UK; P. Boudjouk, North Dakota State University, USA; K.S. Suslick, University of Illinois at Urbana Champaign, USA; C. Dupuy, Universite Scientifique et Medicale de Grenoble, France; *Second row* (left to right): J. Lindley, Coventry Polytechnic, UK; P. Riesz, National Institutes of Health, USA; T.J. Lewis, University College of North Wales, UK; J. Perkins, Sonic Systems, UK; E.J. Einhorn, Universite Scientifique et Medicale de Grenoble, France; P. Kruus, Carleton University, Canada; *Back row* (left to right): R.S. Davidson, City University, UK; J.-L. Luche, Universite Scientifique et Medicale de Grenoble, France; B. Pugin, CIBA-GEIGY, Switzerland; J.P. Lorimer, Coventry Polytechnic, UK.



Picture 3. Speakers at Sonochemistry Session of Ultrasonics International 1989 in Madrid. *From the left*: D.J. Walton, Coventry University, UK; T.J. Mason, Coventry University, UK; J.V. Sinisterra, Universidad Complutense de Madrid; J.-L. Luche, Universite Scientifique et Medicale de Grenoble; M.A. Margulis, Institute of Organic Synthesis, Moscow, Russia; J.P. Lorimer, Coventry University, UK; A. Chyla, T.U. Wroclaw, Poland; S. Leeman, Dulwich Hospital, UK.

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