Jean Rouxel
1935−1998

Jean Rouxel was born in 1935 in Malestroit, a small village in Brittany, northwest of Nantes, France. His father was a railways worker who, during World War II, was active in sabotaging the railway tracks to disrupt the supply lines of the occupying forces. Jean was a secondary school student in Brest, a port city on the Atlantic, and it is in this town that he passed, in 1953, his secondary school end exam (baccalauréat), majoring in mathematics. From his stay in Brest, he had developed a love for boats and the sea and he nearly enrolled in the Navy to become a navigating officer. Only his lack of enthusiasm for the military discipline prevented him from entering the French "Ecole de la Marine" of Brest. He decided to attend courses at the Faculty of Sciences in Rennes instead, graduating in Mathematics, Physics, Chemistry, and Mineralogy in 1957. He started his Ph.D. studies at Rennes under the supervision of Pr. Paul Hagenmuller, the founder of Solid State Inorganic Chemistry in France, and followed him to Bordeaux, where he defended his thesis in 1961. His thesis work dealt with the syntheses and chemical properties of layered oxohalides, and it is during this period that, although he was more attracted to physics, he understood the importance of synthetic chemistry. It is from that time on that he considered the chemical bond to be at the heart of the concern of the solid-state chemist.

France was conducting a war in Algeria at the time, and just after obtaining his Ph.D. diploma, Jean Rouxel was drafted and sent there, where he spent more than two years. Feeling the uselessness of the Algerian fighting campaigns, he openly spoke his mind about it, and as a result, finished his military period as a private; he used to joke frequently about it. He considered this failure to rise in the military grade system as the final evidence of the rightness of his choice not to have enrolled in the Navy in the first place.

On his return from the army, Jean was appointed to the Faculty of Sciences of Nantes as a Maître de Conférence, becoming a full Professor in 1972. The Faculty of Sciences, along with the University of Nantes, had been suppressed in the eighteenth century and was just being restored. As a result, he headed the new Solid State Chemistry Laboratory from the start. In 1966, another laboratory was founded with the appointment of Michel Tournoux, a friend of Jean and also a former student of Paul Hangenmuller. In 1974, the two laboratories merged to become a new research unit associated with the CNRS, Jean being the Director of this newly created body. This unit developed original and high-quality research and, in view of its scientific achievements, the CNRS and the University decided to found the Institut des Matériaux de Nantes in 1988, where laboratories studying both materials chemistry and physics would be closely associated. Indeed, Jean

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Rouxel became the leader of this institute, which hosts almost 200 people currently, attesting to Jean's success in developing it. Because of his relentless endeavor and irresistible enthusiasm, Jean developed research fields that attracted many high-level scientists from all over the world to the Institut, mainly from the United States, Japan, and Germany. He was elected a member of the French Science Academy in 1988 and of the Collège de France in 1996. Jean was also internationally respected: he was made a member of several Science Academies: Acadaemia Europaea in 1989, A. A. A. S. and I. N. S. A. in 1992, and Leopoldina Germany in 1998.

It is not possible, in such a relatively short statement of dedication, to list all Jean's professional activities, including the invited lectures, the academic awards, and publications. Let us just mention some recent events: He was awarded the Alexander von Humboldt Award (Forschung Preis) in 1993, the FMC Award (American Chemical Society) Princeton in 1994, and the Gold medal of the CNRS in 1997.

When Jean started his academic career at the University of Nantes, the concept of an intercalation/disintercalation reaction between a host and a guest was unknown. He quickly realized the importance (practically and theoretically) of such reactions, and he had many exchanges with S. Whittingam, D. Murphy, and F. Di Salvo, who were also involved in this field. He participated very successfully in rationalizing the origin of the host structure and electronic transitions versus the size and amount of the intercalation species (the alkali metals at the beginning) in relation with some electronic and structural characteristics of the host lattice itself. These redox reactions were taking place in two-dimensional compounds and at room temperature, at that time a surprising observation. This explains why Jean later became interested in electronic band level considerations, soft chemistry (chimie douce), and low-dimensional materials. He then studied the stability of low-dimensional solids in terms of the critical ionicity of bonds, of polarization in electronic densities at the surface of layers, and of competition between the cationic d or f orbitals and the anionic sp block. Segregation of chains in slabs (the case of $AgVP_2S_6$) or segregation of slabs in a three-dimensional space [the series of incommensurate misfit layered structures $(MS)_{1+x}M'S_2$ with M = Ln, Sn, Bi, Pb and M′ = Ti, V, Cr, Nb, Ta] has been achieved by controlling strain effects associated with simple size differences or by varying the extent of electronic transfers which have proved to be able to stabilize particular arrangements. $NbSe_3$ was the first compound in which two charge density waves were found, with a depinning of a charge density wave observed for the first time. Jean carried out these studies in collaboration in particular with Pierre Monceau of Grenoble and had extended discussions with many physicists in Orsay, France, among them Denis Jérome and Jacques Friedel.

Jean had an incredible gift to bring physics and chemistry together. He understood very early the importance of a tight connection between physicists and chemists, and he helped develop in his institute a group of researchers devoted to theoretical methods in relation to relevant techniques such as XAFS and EELS and always closely connected to the problems raised by the chemists' new materials.

Jean had recurrent headaches throughout his life, and nobody, not even Jean himself, really worried when these problems worsened a few weeks before his death. Recently his wife, Yannick, had noticed that he was more tired than ever before. He had a warning signal of the ruptured aneurysm that was to take his life a week before the fatal event. He experienced a brutal, although short, loss of consciousness at a meeting near Paris, with a passing loss of the eyesight in his left eye. Unaccustomed to seeking medical advice, he ignored the warning, not even mentioning it to his family, and continued to work as usual. When the second and final attack took place, he realized its gravity, but it was unfortunately too late to save his life. Several minutes after the attack, he lost consciousness, never to recover it. With Yannick, Jean leaves five children, two sons, Tanguy and Erwan, and three daughters, Arzella, Souazic, and Solen. They and we will miss him very much. We hope that this issue of *Chemistry of Materials* will soothe their and our grief and will record the immense leading and inspiring role that Jean had held up to the very last moment of his life. This issue will also serve to show the deep appreciation that all his friends and colleagues had for him.

Jean's Colleagues and Friends and the Personnel of the Institut des Matériaux de Nantes

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