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Aleksandar Stamatovic

A Personal View by an Old Friend and Colleague

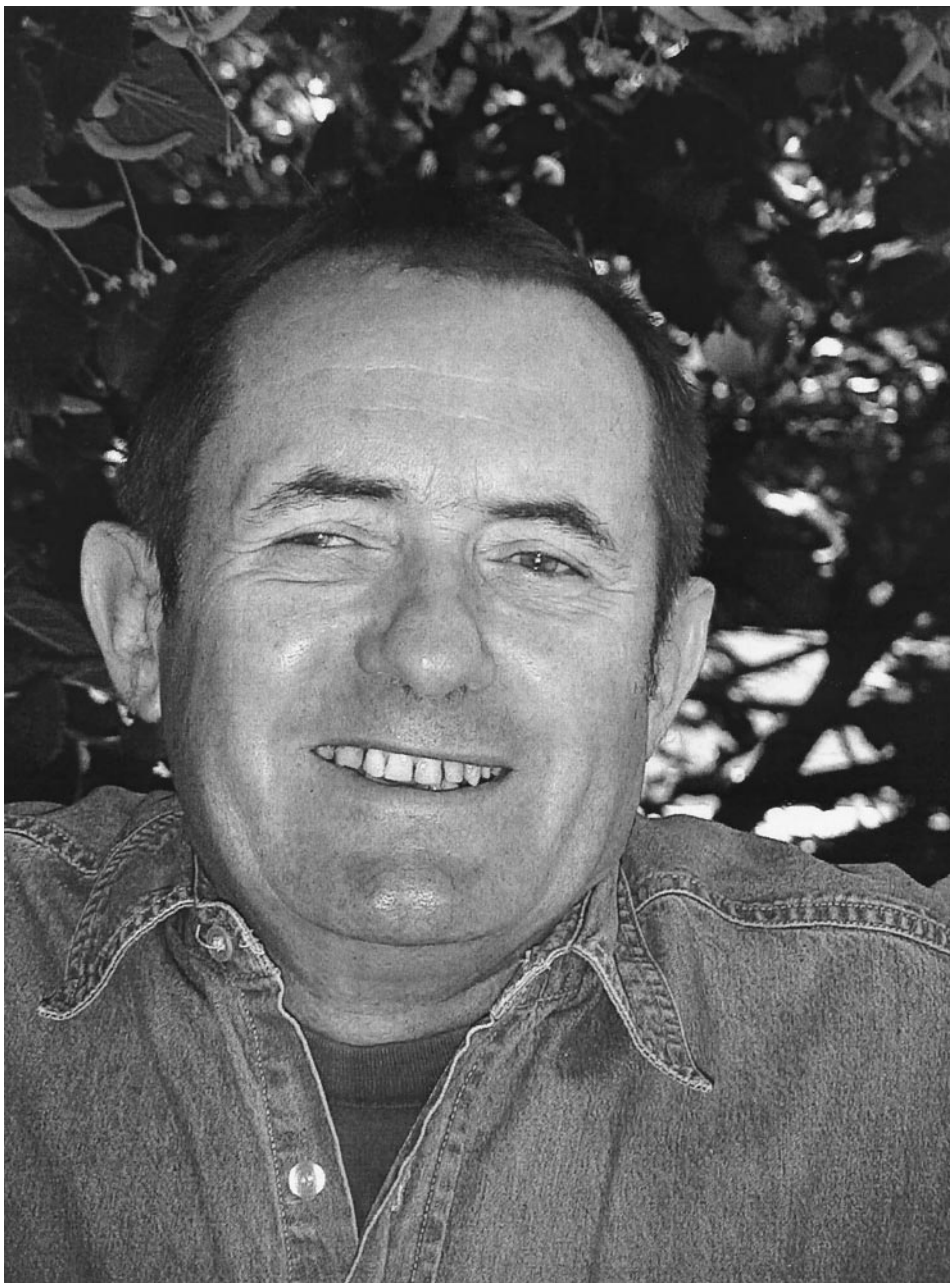
It is a particular pleasure and honour for me to bring the very best wishes to an old and true friend on the occasion of his special birthday. Aleksandar Stamatovic has been a unique friend in many aspects. He had to go through extremely hard times within the last years, personally and with respect to the situation in his country and one truly has to admire him for remaining just the same exceptionally nice and friendly person he has always been. Every colleague who had the pleasure to interact with him will remember Alex as a particularly warmhearted, educated and charming person who never hesitated to share his exceptionally broad knowledge and expertise. And he shared it with many colleagues and students through several collaborations which he maintained in spite of the inherently difficult political situation within the last decade.

He also remained the same in the sense that he rather preferred to work with the students in the lab thus solving the *real* problems on the frontier instead of sitting in the office and talking about how they could be solved. The usual aging trend of an increasing (physical) distance from the lab (and the real problems) was never his case. This attitude certainly kept him young, physically and mentally. I have to say that many students who interacted with him over the years (and not only the female ones) were very surprised to learn that we are going to celebrate his sixtieth birthday soon.

Alex was born on December 26, 1940 in Sabac, Serbia. After finishing elementary school in 1951 he moved to Beograd to attend high school and to study Physical Chemistry at the University of Beograd. In the course of his work towards the masters thesis in

Physics (under the supervision of Professor Milan Kurepa) he became involved with electrons, ions and mass spectrometry. It became soon clear that he was very talented in operating instruments; he also developed remarkable skills to modify and eventually improve them. It also became obvious that he gained a clear view of the physical processes behind his experimental observations. After receiving his masters degree in 1966 he got an offer from George J. Schulz (Yale) to work in his laboratory. At that time the Mason Laboratory at Yale was probably the leading place in the field of electron scattering. Just a few years before resonances (transient negative ions) had been discovered (experimentally and theoretically) and it was also the time when UHV techniques, single particle detection and different types of electron monochromators and analyzers were invented.

Alex used the existing equipment at Yale only casually, instead he worked on a new type of electron source, the *trochoidal electron monochromator* later also known as *Stamatotron*, which uses the combination of a homogeneous electric and magnetic field to disperse electrons in space according to their velocity. In contrast to the Wien filter, where electric field, magnetic field and electron momentum are mutually perpendicular, the Stamatotron uses the magnetic field parallel to the momentum of the electrons. This forces the electrons to trochoidal (or cycloidal) motions. Due to the alignment of the electrons the Stamatotron turned out to be the ideal instrument for performing electron transmission experiments, which in turn is the most direct method to localize resonances. In fact, a series of landmark papers from the Yale laboratory



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describing and classifying resonances in atoms and molecules immediately followed the invention of the Stamatotron. The instrument further combines very useful properties, which makes, e.g., complicated

shielding of the earth's magnetic field obsolete or, in the case of negative ion detection, prevents stray electron from the filament from striking the ion detector. Just to mention a few names at Yale during

that time: Paul Burrow, Léon Sanche, Roger Azria, David Spence, John Boness and a little later Irène Nenner, Michael Allan and Isobel Walker.

The corresponding paper (A. Stamatovic and G. J. Schulz, *Characteristics of the Trochoidal Monochromator*, Rev. Sci. Instr. 41 (1970) 423) became a *classic* with about 800 citations since then. The Stamatotron is nowadays used by many groups in the framework of electron transmission and negative ion detection following low energy electron interaction with molecules, clusters and also adsorbates. The present Volume also contains a paper from the Innsbruck group demonstrating the operation principle of the Stamatotron by the use of trajectory calculations.

Despite the clear prospective of a promising scientific career in the USA Alex decided to return to Yugoslavia receiving his PhD (1969) on the basis of his experimental work at Yale. He felt that he rather should be engaged in educating young people of his home country. He was always convinced that only a broad education is the basis for the development of a responsible society. Teaching natural sciences is a useful means to educate people in a broad sense as one has to recognize and analyze problems on the basis of measurable and rational quantities. On the other hand any *real* experiment is always a compromise between opposite requirements (e. g. spectral resolution/intensity).

Back in Beograd Alex never made particular efforts to get money for expensive and complicated equipment. He was convinced that this is not what his country needed in the first place. Instead he moved on to more applied problems in the areas of meteorology and environmental sciences. He worked on problems related to the physics and chemistry in contrails, the general role of ions for condensation phenomena in the atmosphere, sensors for detecting and monitoring trace gases and even tribological problems. In the course of these studies he and his students developed and established inexpensive and home-built, but yet skillful arrangements. For the general training of young people such a procedure is in many respects more efficient than working with existing commercial machines.

Apart from his duties as a professor at the University of Beograd Alex always had close collaborations with other European groups. In 1975/76 he worked with Ingolf Hertel at Kaiserslautern and later on, most notably, with the Innsbruck group, where he has since then been a regular visitor and was promoted in 1989 to the rank of an *honorary professor*. At Innsbruck he has been involved (among others) in pioneering electron collision experiments with supersonic beams where, e.g., the three body stabilization of transient negative ions can directly be studied. He was also successful in obtaining a Humboldt Stipend again working with Ingolf Hertel, now at Berlin. He came to Berlin for further extended visits working in my laboratory and also witnessing the rapid changes in the new capital.

Within the last decade, on the other hand, he frequently ran into problems when trying to get visa to visit people or to attend conferences in Europe. In March 1999 he had to postpone a half year's visit to Berlin for several months thereby experiencing *in situ* the drama how Beograd was devastated from the air. And just before, he lost his 28-year-old son in a tragic traffic accident. It is hard to imagine, how he could bear this accumulation of dark and dreadful events.

In the meantime the public interest moved to other places all over the world, but the situation in Beograd is far from being normal. Aleksandar continued to work, to interact and to discuss with people according to his motto that we cannot change things which have already happened. Instead we have to tackle future problems with some chance of influence.

We wish him that he will keep his energy, optimism and charm, we also wish him unlimited possibilities to travel and visit his friends all over the world, and last but not least good health. The last is essential to stand the dark events in life, but also to enjoy the good things. And Alex has always been capable of focussing on the positive things around him.

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