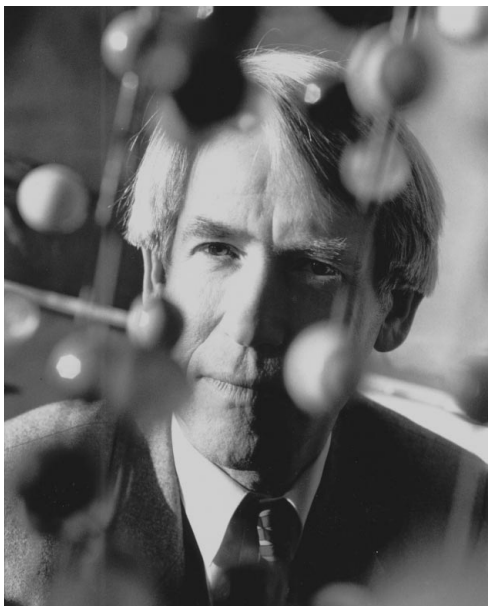


Jan Kroon (1937–2001)



Jan Kroon, Professor in Crystallography (officially in General Chemistry) at Utrecht University, The Netherlands, died unexpectedly on 3 May 2001 due to heart failure. He studied and worked in the tradition of our laboratory of Crystal and Structural Chemistry founded by J. M. Bijvoet, with whom he received his PhD, and A. F. Peerdeman, whom he succeeded in 1985. He is survived by his wife Loes Kroon-Batenburg.

Jan was born on 18 July 1937 in Oud-Schoonebeek, in the north-east of the country. Characteristically, the Kroon family subsequently moved with Jan to Utrecht when he decided to study chemistry at Utrecht University in the center of the country. His father found a fitting job as headmaster of a school in Utrecht. Jan received his PhD in 1964 with a thesis entitled 'The Crystal Structures of Potassium Mesotartrate Dihydrate and Tartronic Acid'. Although trivial to solve by current standards, this was not the case in the early sixties when direct methods were still in their infancy and computing power was rather primitive. Interest in tartrates and the investigation of derivatives spawned from the work of Bijvoet, Peerdeman & van Bommel on the determination of the absolute configuration of sodium rubidium-*d*-tartrate published in 1951.

Much of Jan's subsequent scientific work, which led to approximately 225 published papers, had its roots in his PhD work. Hydrogen-bond interactions were his lifelong interest. Together with his former supervisor, Jan Kanters, many studies were published on carboxylic acids. An early focus was the determination of the position of the bridging H atom in acid salts [Currie, M., Speakman, J. C., Kanters, J. A. & Kroon, J. (1975). *J. Chem. Soc. Perkin II*, pp. 1549–1554]. Later on, hydrogen bonding in sugars was included, in collaboration with Mohamed Mathlouthi. When Loes Batenburg, who later became his wife, joined the team, she introduced molecular mechanics and molecular dynamics into this research. Knowledge of hydrogen bonding was used to understand the strength of the modifications of cellulose fibers, in collaboration with AKZO. Jan enjoyed attending and often organizing the regular meetings of the close hydrogen-bond research community. In recent years, he shared his interest in C–H...O interactions with Thomas Steiner who worked in our laboratory for a short period. In this context, Jan also stimulated research on the *ab initio* prediction of crystal structures and the prediction of polymorphs [van Eijck, B. P., Spek, A. L., Mooij, W. T. M. & Kroon, J. (1998). *Acta Cryst.* **B54**, 291–299].

Interest in direct methods, used in solving the tartronic acid structure, was shared with his colleague and friend Henk Krabbendam, who died in 1995. Together, they published many innovative papers in *Acta Crystallographica*. They pioneered methods for the inclusion of *a priori* geometrical information in direct methods [Kroon, J. & Krabbendam, H. (1970). *Acta Cryst.* B26, 312–314], the now standard random starting set phasing procedure [Krabbendam, H. & Kroon, J. (1971). *Acta Cryst.* A27, 48–53] and the use of anomalous dispersion in combination with direct methods [Kroon, J., Spek, A. L. & Krabbendam, H. (1977). *Acta Cryst.* A33, 382–385]. Both Jan and Henk were members of the small theoretical direct methods community and were close friends of Herbert Hauptman.

When Jan succeeded Peerdeman as Head of our Department in 1985, our group was a typical small molecule research group with a staff having diverse and recognized expertise in various fields. It was clear to him that, in the future, (funded) challenges in crystallography would be in bio-crystallography. It is here that his organizational qualities made a seamless transition possible. Piet Gros (Yale) was invited to Utrecht (1996) to set up a protein crystallography group. In 1988, in anticipation of this process, the crystallography group joined the newly created Bijvoet Center for Biomolecular Research, with advanced X-ray crystallography, NMR and mass spectrometry as major techniques. The original scientific diversity suffered, and some areas of research, such as microwave spectroscopy, had to be discontinued. Fortunately, through Jan's efforts, much of the traditional crystallography could be secured within the National Facility for Single Crystal Studies that is embedded as an integral part of the Bijvoet Center.

Much of Jan's more recent work was focused on structure–activity relations of pharmaceuticals, in collaboration with Organon. His contribution to protein crystallography was one of 'bridging the fence' between small and macromolecular crystallography [Weik, M., Ravelli, R. B. G., Kryger, G., McSweeney, S., Raves, M. L., Harel, M., Gros, P., Silman, I., Kroon, J. & Sussman, J. L. (2000). *Proc. Natl. Acad. Sci.* 97 623–628]. He liked to teach basic crystallographic issues such as symmetry.

Traditionally, there has always been a close scientific collaboration between our research group and Nonius BV. This scientific collaboration was intensified by Jan to mutual benefit. He arranged that in-house expertise on X-ray data collection techniques (Albert Duisenberg), in particular on the evaluation of CCD detector images for non-standard samples, *e.g.* those hampered by twinning, is now available as a commercial product (EvalCCD). The collaboration was recently formalized by the creation of the Nonius BV chair for 'Chemical and Computational Crystallography'.

Jan spent all of his scientific life in Utrecht. Nevertheless, he sustained an impressive international network. He was involved in many collaborative networks which brought many postdocs to Utrecht. He always encouraged young students. In recent years European Crystallographic Meetings were often very much a laboratory outing with the students. Close relations were maintained with former students and postdocs.

As a person, Jan was very much a Francophile: he spent many holidays in France, was fluent in French and was a lifelong driver of the latest Renault (Espace) models. He felt safer in a car than in an airplane. An early interest in the chess game that was played with guests of the Kroon family, hidden from the Nazi occupation ('onderduikers'), stems from World War II. Playing tennis with co-workers and students after work was another of his favorites. Relatively recently, he took an interest in playing golf. It was only hours after an uneventful game of golf together with Loes that his heart failed.

Through the untimely death of Jan Kroon, just 1 year before his official retirement at 65, the Utrecht Laboratory has lost a father figure who created an excellent and progressive work environment for his staff and students."

Ton Spek

Crystal and Structural Chemistry
Utrecht University
The Netherlands