

Professor Richard F.W. Bader, F.R.S.C, F.C.I.C. (1931-2012)

"For the unique contribution to the scientific understanding of the motion of atoms in molecules that is the foundation of Mirce Mechanics"



Professor Bader and Dr Knezevic, the President of the MIRCE Akademy, at Bader's family home during the Easter Holiday, 2010.

The goal of a scientist is to uncover new ideas, concepts and tools, practical or theoretical, that extend our understanding of the world around us and enable us to do new things. In chemistry, the theory of Atoms In Molecules (AIM) developed by Professor Bader is being increasingly used by workers in all fields of chemistry and also in solid state physics. Because AIM has increased our understanding of how atoms behave, it is used in many ways - to develop new alloys and new and better drugs, for example. Consequently, the MIRCE Akademy has decided to further enhance its research and fundamental knowledge of the Mirce Mechanics by introducing the AIM approach to the further understandings of the mechanisms of the motion of functionality trajectory though the system operational processes.

Richard F. W. Bader was born in Kitchener, Ontario, Canada, in 1931, as one of two children. He was the first member in his immediate family to attend university. His strong grounding in experimental chemistry, which earned him nick name “mad scientist” among his friends helped and guided Richard in his search for a theoretical understanding of the concepts of chemistry. That very long and difficult journey started by receiving B.Sc. and M.Sc. degrees from McMaster University, 1953 and 1955, and a Ph.D. from Massachusetts Institute of Technology in 1958 under the supervision of Professor C. G. Swain in physical organic chemistry. While at MIT, he attended the lectures on quantum mechanics given by Professor J. C. Slater. This was followed by a sabbatical year at Cambridge University under Professor Longuet-Higgins where the switch to the new theory of matter was completed. In 1960 he assumed an Assistant Professorship at the University of Ottawa, leaving for an Associate Professorship at McMaster University in 1963. In the mid-1960s a collaborative work with Laboratory for Molecular Structure and Spectra of Professors Mulliken and Roothaan at the University of Chicago, providing him access to high quality theoretical electron density distributions which led to the realization in 1972 that the topology of the electron density provided a unique and ‘natural’ partitioning of the space of a molecule or a crystal into mononuclear regions. This enabled their first systematic study, forming the observational basis for his theory of Atoms in Molecules. Professor Bader remained at McMaster University until his retirement as full Professor.

According to Professor Bader *“The most important thing is to possess a passion for your subject and a willingness to work hard at it, although it never seems like work. I am always amazed that I was paid to do what I love to do and think about. Everything else will follow. You never consider any possible course other than the one that will enable you to pursue your passion”*.

Hence, the MIRCE Akademy feels that the only way forward is to warmly welcome Professor Bader, a quantum chemist, on board and expose its future students to his life long scientific achievements that change chemistry at the global level of significance, which is certainly confirmed by the fact that today he is one of the most cited scientist in the world.

After Richard’s death in January 2012, the MIRCE Akademy has decided to establish the **Richard F.W. BADER Memorial Lecture**, as a sign of the respect to his scientific achievements and the rather short, but significant, contribution to the development of the Mirce Mechanics. For more details please follow the link:

<http://www.mirceakademy.com/index.php?page=bader>