Paul Marmet
1932-2005

On May 20th 2005, Paul Marmet passed away in Ottawa after complications due to bone marrow cancer. Dr. Marmet was a retired assistant professor at the Physics Department of the University of Ottawa. He was formerly a Senior Researcher at the Herzberg Institute of Astrophysics of the National Research Council of Canada in Ottawa. From 1967 to 1982, he co-founded and directed the laboratory for Atomic and Molecular Physics where he was full professor at l'Université Laval in Québec City. In 1967, he spent his sabbatical in the department of chemistry at l'Université de Liège in Belgium. In 1961, Dr. Marmet spent a year at the CSIRO Melbourne, Australia to work on negative ions. He developed an electron selector which played a major role in high resolution electron beam spectroscopy.

A past president of the Canadian Association of Physicists (1981-2), he also served as a member of the executive committee of the Atomic Energy Control Board of Canada. Dr. Marmet has been elected Fellow of the Royal Society of Canada and was made an Officer of the Order of Canada. He was awarded the Herzberg prize, the Rutherford prize, the Parizeau medal and a Service Award from the Royal Astronomical Society of Canada. He is the author of over a hundred journal papers, four books and 200 presentations at scientific meetings.

At l'Université Laval, he worked with his mentor Larkin Kerwin on studies of the interaction of low-energy electrons at surfaces. This enabled him to develop a high resolution electron selector - 10 meV resolution with beam energy ranging from 0.5 eV to 100 eV. Multiple electronic states of negative ions were measured: hydrogen, helium, nitrogen, oxygen, all the halogens and numerous molecules. Even doubly or triply excited states of negative ions were measured and identified. Several hundred states which are not accessible via optical transitions have been discovered in numerous atoms and molecules. Finally, using the filtering power of a mass spectrometer he developped, several free radicals were studied. His electron selector was widely used in electron scattering studies which led to several discoveries such as enhanced vibrational excitation in nitrogen and the first Feshbach resonance in helium. The experimental system he developed was able to detect negative ions in the ionization efficiency curve. His design remains among the most popular in use today.

His interest in astronomy led him to study the numerous anomalies observed by astronomers, especially the inconsistent redshifts reported in the works of H. Arp. To explain these anomalies, Dr. Marmet suggested that an energy loss mechanism resulting from dipole emission could leave the same signature on spectral absorption lines as the Doppler redshift. The dipole is created by momentum transfer of a photon in its interaction with a single molecule in a low density gas. Observations of massive quantities of molecular hydrogen by the European Space Agency's Infrared Space Observatory confirms there is enough interstellar gas to support his hypothesis that the cosmological redshift is not entirely of Doppler origin. The mechanism still waits for a detailed quantum mechanical development and experimental verification in the laboratory. He also proposed other models to explain non-intuitive quantum mechanical phenomena and

relativity. He is said to be a strong critic and a mighty rebel in physics. He leaves many incomplete ideas and many colleagues still wishing to discuss with him.

He will be missed as a good experimentalist and also as my father.

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(Author's title given as of the time of writing)