Robert G. MacDonald

Argonne National Laboratory
Chemical Sciences and Engineering Division
9700 South Cass Avenue, Building 200
Argonne, IL 60439-4837
phone: 630/252-7742, fax: 630/252-9292
e-mail: rgmacdonald@anl.gov

Professional Experience

- **1987-Present**. Chemist, Chemical Sciences and Engineering Division, Argonne National Laboratory.
- **1980-1987**. Research Associate, Physical Chemistry Branch, Atomic Energy of Canada Ltd., Chalk River, Ontario, Canada.
- **1978-1980**. Visiting Assistant Professor, Department of Chemistry, University of Toronto, Toronto, Ontario, Canada.
- **1976-1978**. Research Associate, National Research Council, Division of Chemistry, Ottawa, Ontario, Canada.
- **1973-1976**. National Research Council Postdoctoral Fellow, Department of Chemistry, University of California, Berkeley, California.

Education

- Ph.D., Chemistry, University of Toronto, 1973. (Advisor: G. Burns)
- B.S., Physics and Chemistry, University of Toronto, 1967.

Awards

- National Research Council Postdoctoral Award (1973-1975)
- National Research Council Predoctoral Award (1967-1971)

Career Activities & Highlights

- Areas of Research and Expertise
    - The elucidation of how simple chemical change occurs. The tools for studying chemical reaction dynamics have encompassed shock tubes, gas phase radiolysis, infrared chemiluminescence,
    - molecular beams, and laser based techniques. Currently, time- and frequency-resolved laser absorption spectroscopies are being used to characterize a variety of simple chemical reaction processes, from determining product state distributions under single collision conditions to the measurement of reaction rate constants
    - and branching ratios in radical-radical reactions.

- Professional Organizations
    - American Chemical Society

Publications

Mi-Kyung Bahng and R. G. Macdonald, “Determination of the Rate Constant for the $Nh_2(X^2B_1)$ + $Nh_2(X^2B_1)$ Reaction at Low Pressures and 293K,” *The Journal of Physical Chemistry*, A 112, 13432-13442 (2008).

R. G. Macdonald, “Determination of the Rate Constant and Product Channels for the Radical-Radical Reaction $NCO(X^2\prod)$ + $C_2H_5(X^2A_2”)$ at 293 K”, *Physical Chemistry Chemical Physics,* 9 (31), 4301-4313 (2007).

M.-K. Bahng and R. G. Macdonald, “Determination of the Rate Constant for the $OH(X^2\Pi)$ + $OH(X^2\Pi) \rightarrow O(^3P)$ + H_2O Reaction Over the Temperature Range 293 - 373 k,” *The Journal of Physical Chemistry,* A 111 (19), 3850-3861 (2007).

Y. Gao and R. G. Macdonald, “Determination of the Rate Constant for the Radical-Radical Reaction $NCO(X^2\prod)$ + $CH_3(X^2A_2”)$ at 293 K and an Estimate of Possible Product Channels,” *The Journal of Physical Chemistry*, A 110 (3), 977-989 (2006).

Y. Gao and R. G. Macdonald, “Determination of the Rate Constants for the $NCO(X^2\Pi)$ + $Cl(^2P)$ and $Cl(^2p)$ + $Cinco(x^1a')$ Reactions at 293 and 345 k,” *The Journal of Physical Chemistry*, A 109 (24), 5388-5397 (2005).