

## **Marc Donohue - Special Seminar Wed 8/15 at 11:00am in Maryland 220**

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**From:** Marc Donohue  
**To:** Aranovich, Gregory; Betenbaugh, Michael; Chernoff, Martin; Cohen, Robin; Erickson, Jeffrey; Gaddy, Glen; Hanes, Justin; Harden, James; Katz, Joseph; Konstantopoulos, Kostas; Matuszak, Dan; Ostermeier, Marc; Paulaitis, Michael; Sangwichien, Chayanoot Gift; Stebe, Kate; Wirtz, Denis; Yang, Charles  
**Date:** 8/13/01 2:47 PM  
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### **A NEW INSIGHT INTO THE ENERGY OF ATOMIC HYDROGEN**

**Raji Heyrovska**

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#### **Abstract:**

*"This talk is a centenary tribute to **H. A. Rowland**, the first Professor at Johns Hopkins University who demonstrated the magnetic effects accompanying moving charges."*

The present speaker recently found simple linear relations between the standard aqueous redox potentials and the gaseous ionization potentials. On a deeper investigation of the latter, she finds that the quantum theory based on Bohr and Schrodinger considers only the electrical and mechanical energies of the hydrogen atom, whereas the two constituent particles have magnetic moments as well. On researching this, she found that Larmor's relations between the magnetic, electric and mechanical properties of moving charges is applicable to the hydrogen atom as well. This "explains" why the electron does not fall into the nucleus (which the Bohr theory could not explain) - as due to the balance of magnetic and coulombic forces and how it gives rise to the mechanical angular momentum and that the energy of the

#### **A brief biodata:**

Dr. Raji Heyrovska obtained her Ph. D. in Cambridge, UK and is working in the J. Heyrovsky Institute of Physical Chemistry of the Academy of Sciences of the Czech Republic. She has made several original contributions to fundamental problems connected with solution chemistry, electrochemistry and physics, and an account can be found at <http://www.jh-inst.cas.cz/~rheyrovs>.

Marc Donohue

Associate Dean for Research

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