



## James Kern Baird

Professor

Departments of Chemistry, Physics, and  
Chemical Engineering



### BIO:

Dr. James K. Baird is currently Professor of Chemistry, Adjunct Professor of Physics, and Adjunct Professor of Chemical Engineering. During 1982 – 1990 and again during 2001 – 2005, he served as Chairman of the Department of Chemistry. From 1985 – 1999, he also served as Principal Scientist of the University of Alabama in Huntsville Consortium for Materials Development in Space. From 1992 – 1995, he was Director of the University of Alabama System Ph.D. Program in Materials Science. During the academic year 1998-1999 and again in the spring of 2007, he was Visiting Professor of Chemistry, Sterling Chemistry Laboratory, Yale University, New Haven, CT. He is the recipient of many academic awards including, Phi Beta Kappa (1963), Sigma Xi (1963), Henry Fellowship for study at Cambridge University, England, (1963), Woodrow Wilson National Fellowship (1963-1964), and Oak Ridge Graduate Fellowship (1965-1968). His research awards include the Defense Atomic Support Agency Certificate of Achievement (1970), NATO Visiting Research Fellow, Department of Theoretical Chemistry, Oxford University, England (1979-1982), American Chemical Society, Carolina-Piedmont Section, Charles H. Stone Award for Research (1991), American Society for Engineering Education Distinguished Summer Faculty Research Fellow, Naval Research Laboratory, Washington, DC (1993), Summer Faculty Research Fellow, NASA Marshall Space Flight Center, Huntsville, AL (2001), and the University of Alabama in Huntsville Foundation Award in Research and Creative Achievement in the Physical Sciences (2008). In addition to questions involving propulsion, Dr. Baird's research interests include (1) protein crystal growth, (2) critical phenomena in liquid mixtures, (3) diffusion in solids and liquids, and (4) heat transfer at the solid-gas interface.

### Contact Information:

University of Alabama in Huntsville  
301 Sparkman Drive, Huntsville, AL 35899  
bairdj@uah.edu; www.uah.edu/chemistry  
<http://www.uah.edu/science/departments/chemistry/faculty-staff/286-main/science/science-chemistry/3902-james-k-baird>

### RELEVANT PUBLICATIONS:

1. Christopher D. Specker, Joel M. Ellis, and James K. Baird "Chemical Dynamics and Critical Phenomena: Electrical Conductivity and Reactivity of Benzyl Bromide in Triethylamine + Water Near its Consolute Point" *International Journal of Thermophysics* **28**, 846 – 854 (2007).
2. Jeffrey D. Rowe and James K. Baird "Reduced Capillary Length Scale in the Application of the Theory of Ostwald Ripening to the Coarsening of Charged Colloidal Crystals in Electrolyte Solutions" *International Journal of Thermophysics* **28**, 855 – 864 (2007).
3. James K. Baird "Phonon Assisted Transport of a Reactive Atom in the Lattice of a Solid Metal Catalyst" *Molecular Physics* **105**, 2783 – 2791 (2007)
4. Baichuan Hu, Randi D. Richey, and James K. Baird "Chemical Equilibrium and Critical Phenomena: Solubility of Indium Oxide in Isobutyric Acid + Water near its Consolute Point" *Journal of Chemical & Engineering Data* **54**, 1537-1540 (2009)
5. Baichuan Hu and James K. Baird "Reaction Kinetics and Critical Phenomena: Iodination of Acetone in Isobutyric Acid + Water Near the Consolute Point" *Journal of Physical Chemistry A* **114**, 355 – 359 (2010)
6. Baichuan Hu and James K. Baird "Chemical Equilibrium and Critical Phenomena: The Solubilities of Iron (III) Oxide and Cobalt (II, III) Oxide in Isobutyric Acid + Water Near the Consolute Point" *International Journal of Thermophysics* **31**, 717 (2010).
7. B. Hu, J. K. Baird, R. D. Richey, and R. G. Reddy "A Chemical Test of the Principle of Critical Point Universality: The Solubility of Nickel (II) Oxide in Isobutyric Acid + Water Near the Consolute Point" *Journal of Chemical Physics* **134**, 154505 (2011).
8. T. J. Giesy, A. S. Chou, R. McFeeters, J. K. Baird, and D. A. Barlow "Critical Point Universality in Adsorption: The Effect of Charcoal on Isobutyric Acid + Water Near the Consolute Point" *Physical Review E*, **83**, 061201 (2011).
9. James K. Baird and Robert L. McFeeters "Effects of Hydrodynamic Convection and Interionic Electrostatic Forces on Protein Crystallization" *Crystal Growth and Design* **13**, 1889 – 1898 (2013)
10. J. K. Baird, R. L. McFeeters, and K. G. Caraballo "Specific Rate of Protein Crystallization Determined by the Guggenheim Metho" *International Journal of Thermophysics*, **35**, 830 – 840 (2014)
11. B. Hu, J. K. Baird, P. K. Alvarez, K. C. Melton, D. A. Barlow, and R. D. Riche. Diverging Thermodynamic Derivatives Associated with Heterogeneous Chemical Equilibria in a Binary Liquid Mixture with a Consolute Point. *International Journal of Thermophysics*, **35**, 841 – 852 (2014)