From the Director

Welcome to the Fall 2008 issue of Inquiry *magazine*

The Ames Laboratory has had a busy past few months. In the spring of this year, Chinese researchers announced the discovery of high-temperature superconductivity in a new pnictide compound based on iron and arsenic, and the scientific world was once again engaged in a race to replicate, extend and understand the results. Ames Lab researchers, led by Paul Canfield and working closely with our environmental safety and health professionals to ensure safe handling of these poisonous materials, were able to reproduce the results within days. A number of significant "firsts" ensued: we created new compounds that also demonstrated elevated-temperature superconductivity, building on the availability of rare earth elements from our Materials Preparation Center; among these was the first non-oxide, all-metallic superconducting FeAs compound; we created the first single crystal specimens suitable for making critical measurements, such as the phonon dispersion curves; and direct comparisons have been made between advanced theoretical and experimental work. Along the way, Rob McQueeney and his collaborators collected the first research results from the Wide Angular Range Chopper Spectrometer (ARCS) at Oak Ridge National Lab's new Spallation Neutron Source. The science is still emerging at a fast pace, and as I write 22 papers have been submitted to the physics archive server and submitted to archival journals, and 7 of them are already accepted for publication or in print. You will be able to read more about this in a future issue of *Inquiry*, after the dust settles a little.

This summer's pnictide activity provides some striking examples of the capabilities, values and working methods that make the Ames Laboratory a unique national resource. In the spring, I commissioned a committee to look at our "brand" and they came up with seven "core values" that describe the ways that we do our work. These are listed on page 16, but it is worth noting how several of them contributed to our efforts this summer. **Safety** is one of our core values and distinguishing features; without our established safety culture it would have been impossible to undertake work focusing on arsenic. **Agility** allowed the Ames Lab to move quickly and responsively to address the emerging scientific opportunities. Our **People** contributed individual skills, time and effort, which produced greater results through extensive **Collaboration** that extended across different sectors of the Ames Laboratory to our partner national labs and far beyond. More than 20 people have been involved in this work, at Ames and around the world, in a team that could only be created by a national laboratory. Throughout the effort, **Excellence** has been the hallmark, as reflected in the quality and prestige of the journals that are publishing this work.

Our values are not something that we decide to use or not use, and neither are they a directive from the executive office: they are part of the instinct and intuition that characterizes the Lab at every level, and they emerge naturally as it does its work. The pnictide efforts illustrate how well the branding committee described the Ames Lab and what it does: **Creating Materials and Energy Solutions**.

Alex King, Director