



THE Ames Laboratory
Creating Materials & Energy Solutions

Scientific Heritage

The Ames Laboratory emerged from work performed for the Chicago Metallurgical Laboratory, part of the nation's historic World War II Manhattan Project. Frank Spedding, who was an Iowa State University rare-earth chemist and head of the chemistry section for the Chicago Metallurgical Lab, helped Nobel Laureate Enrico Fermi and colleagues create the world's first controlled nuclear chain reaction on Dec. 2, 1942, in an abandoned squash court under the stands of the University of Chicago's Stagg Field. Spedding and his Iowa State colleague, metallurgist Harley Wilhelm, and their team developed a uranium purification process that produced two tons, or one-third of the highly pure uranium that was used in the core of the Chicago chain-reaction experiment and then produced 2,000,000 pounds for the first government nuclear reactors.

For its dedication, Iowa State received the prestigious Army-Navy Flag for Excellence in Production for contributions to the war effort.

Following the war, what had been known as the Ames Project was officially named the Ames Laboratory on May 17, 1947. Frank Spedding became the Laboratory's first director, solidifying his dream to create a federal materials research laboratory on a university campus that would create a scientific

synergy beneficial to both entities. Since its inception, Ames Laboratory has been located on the Iowa State University campus.

In addition to developing the process to purify uranium, other key mission accomplishments include:

- ◆ The first process to recover uranium from scrap materials and convert it for reuse.
- ◆ The first ion exchange process to separate rare-earth elements from each other in gram quantities.
- ◆ The first large-scale production process for thorium using a reduction method.

Although the Laboratory's focus on materials continues today, its research thrust has grown to include many additional areas of science, engineering and technology development.

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Frank Spedding

SIX AMES LABORATORY SCIENTISTS HAVE BEEN NAMED TO THE NATIONAL ACADEMIES:

- ◆ **National Academy of Sciences**
 - ◆ Frank Spedding, 1952
 - ◆ John Corbett, 1992
- ◆ **National Academy of Engineering**
 - ◆ Donald Thompson, 1991
 - ◆ Dan Shechtman, 2000
 - ◆ R. Bruce Thompson, 2003
 - ◆ Karl Gschneidner, Jr., 2007



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