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Frank H. Spedding award citation

Today it is my honor and my pleasure to present the *Frank H. Spedding Award for Outstanding Contributions to the Science and Technology of the Rare Earths*. Professor Spedding, after whom this award is named, was the former director of Ames Laboratory at Iowa State University. He received his Ph.D. in 1929 under the supervision of Professor G.N. Lewis and went on to receive the Langmuir Award in Pure Chemistry, awarded to a chemist, under 31 years old. With the advent of World War II he became involved with the Manhattan Project, and was present with Enrico Fermi during the first sustained pile reaction at the University of Chicago. Among Professor Spedding's most notable achievements was the development in the 1950s of a form of ion exchange displacement chromatography that permits the remarkably effective separation of neighboring rare-earth elements. Additionally, the Spedding team established the efficacy of EDTA in performing such separations.

The first Spedding Award was presented, by Frank Spedding himself, on June 26, 1979 to W.E. Wallace. At each of the following eight meetings, an additional award has been made to honor outstanding contributions to the area of rare-earth science and technology.

Today it is my privilege to present this, the 10th Spedding Award, to Dr. Lynn Boatner, a Corporate Fellow from Oak Ridge National Laboratory. He was chosen, by the awards committee, from an excellent group of nominees.

For over three decades, Lynn has continuously demonstrated outstanding achievements in the advancement of the science and technologies of *f* element materials. His numerous contributions to the fundamental understanding of the physical behavior, the exploitation of applied properties, and the certification of technical applications of rare-earth systems are truly remarkable, as demonstrated by his prolific publication record—he has over 400 technical publications and 13 patents!

Lynn is an accomplished condensed matter physicist. He pioneered EPR investigations of rare-earth ions in crystalline environments, resulting in the discovery of the quadrupole interaction and the initial verification of

the theory on the dynamic Jahn–Teller effect. He then extended these studies to the entire series of rare-earth orthophosphate and orthovanadate crystals, in which he meticulously characterized a wide variety of magnetic, optical, chemical and thermo-mechanical properties. And what is more, Dr. Boatner did not stop with rare-earth crystalline materials. He endeavored to explore these same elements in phosphate glasses, where the new dimensionality of structural disorder opened up yet another area of interesting physical phenomena.

As a prominent technologist in the field of rare-earths research, Lynn never stopped at merely elucidating materials properties. Lynn's works have led to the development of phosphate-based glasses for high-level nuclear-waste storage, fast scintillators for gamma- and X-ray detectors utilizing rare-earth phosphates, the discovery of new thermophosphors for remote, non-contact high-temperature measurements, new scintillators that eliminate the use of photomultiplier tubes, and new hosts for rare-earth microlasers. He is responsible for several technology transfers from basic research programs to small business ventures.

There were several things that really struck the Awards committee about Lynn Boatner's nomination. His letters were from a surprisingly wide variety of people in different disciplines. They each had something unique to say about Lynn's professional accomplishments and they all said what a great teacher and person he is. As one of his nominating letters so eloquently stated "In Lynn Boatner one has a bigger than life person: a wizard at crystal growth, a splendid spectroscopist, a competent crystallographer, an immensely productive scientist and a level-headed, gentlemanly and extremely kind human being". Dr. Boatner's creative, broad-ranging contribution to both the science and technologies of the rare earths and the actinides captures the essence of the Rare Earth Research Conference itself.

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