



# Los Alamos names Laboratory Fellows for 2015

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## Honorees span sciences in materials, weapons physics and complex systems

LOS ALAMOS, N.M., Jan. 27, 2016—Four Los Alamos National Laboratory scientists have been selected as 2015 Laboratory Fellows. The honorees this year are Michael Bernardin, Avadh Saxena, Carlos Tome and Piotr Zelenay.

“The Laboratory Fellows Organization recognizes researchers for innovative scientific and technical advances in their respective fields,” said Laboratory Director Charlie McMillan. “The exciting work by Michael, Avadh, Carlos and Piotr exemplifies the essential science we do at Los Alamos that helps enable continuing success in our national security mission. I commend each of them for this prestigious achievement.”

The committee ranked this year’s nominations on the basis of:

- Sustained, high-level achievements in programs of importance to the Laboratory
- A fundamental or important discovery that has led to widespread use;
- Having become a recognized authority in the field, including outside recognition and an outstanding record of publications.

The Fellows organization was established in 1981 and comprises technical staff members who have been appointed by the Laboratory director in recognition of their sustained outstanding contributions and exceptional promise for continued professional achievement. Fellows are limited to 2 percent of the Laboratory’s technical staff. They advise management on important issues, promote scientific achievement, and organize symposia and public lectures. The organization administers the annual Fellows Prize for Outstanding Research in Science or Engineering and the Fellows Prize for Outstanding Leadership in Science or Engineering.

### About the Honorees

**Michael Bernardin** is considered the Nation’s expert in the physics of the Electromagnetic Pulse (EMP) created by high-altitude nuclear detonations, and he is nationally recognized for his understanding of weapons physics. He has authored or co-authored more than 250 classified publications. His expertise is solicited

at the highest levels, representing the Laboratory and National Nuclear Security Administration through his testimonies to various committees and assessment teams.

The NNSA Defense Programs Advisory Committee considers Bernardin “highly credible with an unimpeachable standard for technical credibility.”

Bernardin co-founded the Theoretical Institute for Thermonuclear and Nuclear Studies (TITANS) program to train and sustain nuclear weapons scientists when nuclear testing ceased, and was the principal author of its textbook. Since its inception, more than 600 scientists from across the Laboratory have attended TITANS classes, bringing a new generation of talent into the Laboratory’s core mission.

**Avadh Saxena** has shown how materials modeling methods can be used to answer many key questions in materials science, thereby becoming an international authority in phase transitions in both functional materials and nonlinear excitations in low-dimensional electronic materials. He is influential as a collaborator and intellectual leader over a broad range of materials and condensed matter physics, with almost 5000 citations to his work. Saxena has an impressive list of international collaborations, invited talks, publications and service on advisory boards, and was elected as American Physics Society Fellow in 2014 “for foundational contributions to phase transitions in functional materials and nonlinear excitations in low-dimensional electronic materials.” His work on phase transformations has proven valuable to the Laboratory’s Advanced Strategic Computing Program and helped clarify a detailed mechanism for the alpha to delta phase transformation in plutonium.

**Carlos Tome** is known as one of the world’s leading experts in the micromechanics of polycrystalline metals and possesses an outstanding publication record with more than 11,000 citations that have far-reaching and influential impact. He has co-authored a now-classic reference book in the field of materials modeling, *Texture and Anisotropy*, a book with more than 1400 citations. His influence outside of Los Alamos is extensive. For example, a symposium was held in his honor in 2011 at the Minerals, Metals, and Materials Society (TMS) annual meeting, which included more than 90 presentations by researchers from all over the world. The TMS’s Structural Materials Division awarded the 2013 Distinguished Scientist/Engineer Award to Tome. The theories, models and numerical codes that he has developed with colleagues are widely used in academia, national laboratories and industry.

**Piotr Zelenay** has made sustained contributions in the field of catalysis. His discovery of non-platinum group catalytic activity is a well-recognized advance in fuel-cell technology.

He has headed a large, sustained effort in fuel-cell technology supported by the Department of Energy Office of Energy Efficiency & Renewable Energy since 2007, forming a cornerstone of Los Alamos’s successful fuel cell program, and spinning off next-generation energy technologies. His continued high-level achievement is reflected in more than 150 publications with 6700 total citations, as well as 18 patents in process or granted. His work is generally considered among the very best worldwide; for example, his Nature paper on non-platinum group catalysis has over 800 citations.