

The Roger W. Boom Award Presented to Joel Ullom



October 9, 2012 (PA09). On October 8th, 2012, Professor K. Ted Hartwig (Mechanical Engineering at Texas A&M University), presented the Roger W. Boom award of the Cryogenic Society of America (CSA) to Dr. Joel Ullom of NIST, Boulder, USA. The presentation was made at this year's 2012 Applied Superconductivity Conference (ASC) in Portland, Oregon, USA (see the photo below).



Dr. Ullom accepting the Award Plaque from Prof. Hartwig at the ASC 2012 plenary session of Oct. 8, 2012.

In his presentation, Dr. Hartwig evoked his working with Roger Boom at the University of Wisconsin for over 15 years (1971-1986) as a graduate student, administrative assistant on proposal/report writing, and as a post doc. Hartwig has many fond memories of working with Roger. He said Dr. Boom provided a wonderful interdisciplinary open environment where students, post docs and professors had daily interactions, where scientific and technical arguments were encouraged, and where all were frequently exposed to pioneers in the fields of applied superconductivity and cryogenics. Boom influenced dozens of young scientists and engineers to pursue careers in cryogenic engineering and applied superconductivity, many of whom have flourished in the field. Boom was a modest gentleman with strong convictions who has influenced many lives.

The Roger W. Boom award is given every other year at the applied Superconductivity Conference to a young professional (under 40 years of age) who "shows promise for making significant contributions to the fields of cryogenic engineering and applied superconductivity". The award comes with a cast metal award plaque and an honorarium check. This year's ceremony and awards luncheon sponsored by the

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IEEE Council on Superconductivity (CSC) was honored by the presence of Ms. Jennifer Manino of Portland, Oregon, grandniece of Dr. Boom. The Boom family trust funds the award. At the luncheon Dr. Ullom expressed his appreciation of the Award (photo below).



Joel Ullom speaking at the awards luncheon. To the right, Dr. Elie Track, CSC President.

Dr. Joel Ullom, this year's R.W. Boom awardee, is the NIST Project Leader for superconducting calorimeter development and has been working in the fields of low temperature sensors, low temperature electronics, and cryogenic systems since 1994. Dr. Ullom has a B.A in physics from Princeton, and M.A. and Ph.D. degrees from Harvard. Joel has been a driving force behind the development and dissemination of analytical instruments based on superconducting transition-edge calorimeters. His work has led to the deployment of six transition-edge sensor-based instruments at collaborating institutions. Dr. Ullom has developed X-ray, gamma-ray, and alpha-particle transition-edge calorimeters with world-record performance. He led the first demonstration of high-resolution transition-edge calorimeter multiplexing and is an author on each of the papers reporting first demonstrations of calorimeter readout using frequency-, time-, and code-domain multiplexing. In related work, he led the development of practical low temperature refrigerators based on superconducting tunnel junctions. His work on tunnel junction refrigerators was featured on the cover of *Physics Today* and twice on the cover of *Applied Physics Letters*. His work on gamma-ray sensors was described in *Scientific American* and was highlighted in President Obama's 2009 Budget Request as one of the \$300 million DOE Nonproliferation and Verification R&D program's top six accomplishments for that year. Dr. Ullom has also worked successfully with industry to transfer and commercialize his advances in cryogenic systems and microcalorimeter spectrometers. He has over 100 refereed scientific publications. Dr. Ullom received a Presidential Early Career Award for Scientists and Engineers in 2004 and a Department of Commerce Silver Medal in 2005.

The R.W. Boom award citation reads "The Roger W. Boom Award is given to Dr. Joel Ullom for his exceptional contributions in applied superconductivity and cryogenic

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engineering. These contributions include the demonstration of on-chip quantum refrigerators, the development of new superconducting x-ray and gamma-ray spectrometers that provide new capabilities both for industrial materials analysis and nuclear materials accounting, and the development and commercialization of an important cryogenic system."

All other awards presented at the ASC 2012 were those established and/or sanctioned by CSC. A separate highlight on these awards will be published at the CSC web site and separately in this section.