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Dust and Soiling of Solar Devices: History, Status, and Expectations (Is there a "Holy Grail" Solution?)

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Biography

Lawrence L. Kazmerski is Emeritus Research Staff Member of the National Renewable Energy Laboratory, and Research Professor, Renewable and Sustainable Energy Institute, University of Colorado, having served as Executive Director, Science and Technology Partnerships at NREL 2009-2012. Previously, Kazmerski served as the founding Director of the National Center for Photovoltaics (NCPV) for the period 1999-2008. He received his B.S.E.E. in 1967, M.S.E.E. in 1968, and his Ph.D. degree in electrical engineering in 1970—all from the University of Notre Dame. He served in a postdoctoral position with the Atomic Energy Commission at the Notre Dame Radiation Research Laboratory, January through August 1971. He was on the electrical engineering faculty (tenure) of the University of Maine before coming to SERI (NREL) in 1977. His research at Maine included NSF- and ERDA-funded work in thin-film photovoltaics and the report of the first thin-film copper-indium-diselenide (CIS) solar cell. He was SERI's (NREL's) first staff member in photovoltaics, hired specifically to establish efforts in the characterization of photovoltaic materials and devices; he led NREL efforts in measurements and characterization for more than 20 years. Kazmerski has more than 320 publications and some 200 invited talks. His research interests included the DOE Office of Science Energy Frontiers Research Center (EFRC) at NREL dealing with "materials by design" (www.centerforinversedesign.org), for which he served as Project Integrator, and solar projects ranging from the rebuilding of the electricity infrastructure in Iraq through mitigating dust problems for PV collectors (with emphasis on the MENA countries). He served as the Co-Director of the Joint US-India Joint Clean Energy Research and Development Center ("Solar Energy Research Institute for India and the U.S." or SERIIUS – www.SERIIUS.org). Kazmerski's current research is in the area of PV component reliability, with some emphasis of the fundamental reliability issues relating to the front surfaces of PV module (www.PVReliability.org). This is work currently funded by CAPES and Ciência sem Fronteiras in Brasil. This includes some special R&D on soiling and dust measurement, development of soiling monitoring stations, and mitigation approaches. He holds a visiting research professorship at the Pontifícia Universidade Católica, Minas Gerais (PUCMinas), Brasil (2011-). He has been recognized with several national and international awards, including the World PV Prize, the IEEE William R. Cherry Award, the AVS Peter Mark Memorial Award, and the ASES Charles Greeley Abbot Award. In 2013, Kazmerski was presented the ISES Christopher A. Weeks Award for contributions in accelerating PV research, development, and deployment around the world. He is a Fellow of the IEEE, a Fellow of the APS, a Fellow of the AVS, and a Fellow of the American Solar Energy Society (ASES). Kazmerski holds joint research (renewable energy) faculty appointments at the University of Southampton and the Chinese Academy of Science, Beijing. Kazmerski is a member (elected 2005) of the U.S. National Academy of Engineering.