Silicone Materials for Sustainable Energy: Emphasis on Photovoltaic Materials for Module Assembly and Installation

with Ann Norris,
Dow Corning Corporation

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ICTAS Room 310, Stanger Street

The Photovoltaic (PV) industry has aggressive goals to decrease $/kWh and lower the overall cost of ownership; these goals are critical for the broad adoption of PV globally. Silicone polymers possess key material properties that make them excellent candidates for photovoltaic module encapsulants and other materials for module assembly and installation that will help achieve these goals. These properties include UV stability, high optical transparency, excellent corrosion resistance, low moisture retention, wide temperature use range, and excellent electrical properties. This work will show why silicones offer improvements, over organic polymer photovoltaic encapsulants, of (1) increased photovoltaic module efficiency due to higher transparency at short wavelengths, and (2) improved long-term reliability. Actual array data comparing silicones to EVA encapsulated modules will be compared and results from accelerated aging will be discussed.

Ann Norris obtained a Bachelors degree in Chemistry from University of Wisconsin at LaCrosse. She obtained a Ph.D. degree in Materials Engineering Science from Virginia Polytechnic Institute and State University, with an emphasis on polymer characterization and structure/property relationships. She has 27 years experience at Dow Corning Corporation in areas of Elastomers Research, Materials Development, Microelectronics Product Development, Photonic Materials R&D and Solar Industry materials development. Ann is a member of the American Chemical Society and has numerous external publications, presentations, and patents. She is a Scientist in the Solar Industry and is currently collaborating in areas of novel silicone materials for photovoltaic applications for module assembly and module installation. Her current areas of emphasis includes providing technical guidance for new opportunities for the use of silicones in photovoltaic applications; supporting new customers and new application areas for the use of silicones in the PV industry. She also coordinates and leads externally Dow Corning funded solar projects at Universities and Research Institutes.