

James A. Ruud is a Principal Scientist at GE Global Research in the Coatings and Surface Technologies Laboratory, and he is currently the Nanoceramics Platform Leader for GE's Nanotechnology program. He holds a Ph.D. and M.S. in Applied Physics from Harvard University and a B.S. in Physics and Mathematics from the Pennsylvania State University.

Since joining GE in 1992, he has been developing new high-temperature, functional ceramics for industrial applications. Much of his work has been directed toward processing methods for coatings used on aircraft engines and power generation turbines. He has developed several coating processes that are currently in production at global manufacturing sites

Jim has worked on materials research thrusts supporting sustainable energy technologies, including solid oxide fuel cells (SOFCs) and CO₂ capture. For SOFCs he directed a global group developing high-power-density cathode materials and the understanding of the relationship between microstructure and performance. He was PI of a DOE project to demonstrate feasibility of high temperature CO₂ separation through nanoceramic membranes.

Jim is currently the Nanoceramics Platform Leader for GE's Nanotechnology Advanced Technology program. In that role he is leading a global team of scientists developing nanomanufacturing technologies to produce novel materials using nanoscale processing methods for applications in energy production, energy efficiency, transportation and healthcare. As part of that work, he leads a NIST ATP program developing a manufacturing infrastructure for the design and processing of superhydrophobic surfaces for use in harsh industrial environments, and he leads a DOE program developing a nanomaterials platform for high-temperature gas sensors for energy-efficient process heating equipment.

He has 20 publications and holds 27 U.S. patents, with 40 patents pending. He is a certified black-belt in Six Sigma quality management methodology.