



Francis "Frank" A. Garner

For five decades Frank Garner has played a prominent role in the international radiation damage and nuclear reactor communities as a technical contributor and a scientific leader. His studies on the response to neutron radiation of structural alloys have led to significant revisions of the nuclear community's perception of materials issues involving void swelling, irradiation creep, embrittlement, transmutation and radiation-enhanced corrosion. He is adept at transferring scientific findings into engineering consequences and solutions for operating reactors.

Dr. Garner's studies first focused on liquid metal fast breeder reactors, broadened into the fusion reactor field, and then turned to materials issues of light-water and heavy water reactors, as well as accelerator-driven spallation neutron sources. He has had a strong impact on the worldwide development and application of alloys for fast breeder and fusion reactors. His proposal in 1994 that pressurized water reactors would experience strong and unanticipated effects from void swelling and Irradiation creep has proven to be correct, based first on his subsequent studies conducted in Russia and Kazakhstan and confirmed in later studies in Western reactors, with the issue now being considered as an important criterion for plant life extension of PWRs. He has published many papers on charged particle irradiation as a surrogate for neutron irradiation.

Dr. Garner's work ranges from fundamental to applied, and from experimental to theoretical. He contributes to the body of knowledge as a single author and team participant or leader. He has been involved in many formal and informal international collaborative efforts and has conducted experiments in the USA, Japan, Europe and a number of former Soviet States. He was Program Coordinator for the U.S./Japan Fusion Materials Collaboration Using Fission Reactors and has served on numerous advisory committees and panels, such as the Materials Science Program Advisory Committee for the Los Alamos Meson Physics Facility, Materials Working Group for the Accelerator Production of Tritium Project, various working groups of the EPRI reactor Internals programs (CIR, JOBB, AARM), Domestic Irradiation Facilities Evaluation Panel, GNEP Facilities Review, Cooperative Research Project SMORE for the IAEA, etc. He has been the US Principal Investigator on numerous projects in Russia, Ukraine, and Kazakhstan funded by ISTC, STCU, CRDF, and NATO. He currently leads a strong international effort involving ion simulation of neutron-induced swelling with Ukrainian, Russian and U.S. partners. He frequently serves on International Committees for Symposia held in former Soviet countries, Asia and Europe.

Education—B.Sc. Chemical Engineering (1963) and D.Sc. in Nuclear Engineering with Materials Science emphasis (1970) both at the University of Virginia in Charlottesville.

History—After two years military service (Captain) at Picatinny Arsenal working on nuclear subjects, he joined Advanced Reactors Division, Westinghouse Electric Company in 1970. He transferred to Westinghouse Hanford Company in 1973, and again transferred to Battelle's Pacific Northwest National Laboratory in 1987 as a result of the DOE-directed Hanford consolidation. He reached PNNL's top rank Scientist VI in 1994, serving until January 2009. Currently he serves as a Chief Consulting Scientist for both TechSource Inc. and serves as President of Radiation Effects Consulting LLC, Dr. Garner currently serves half-time as Research Scientist at Texas A&M University Nuclear Engineering Department and half-time as Professor at Moscow Engineering Physics Institute Department of Materials Science. He also serves unpaid as Adjunct Professor at University of Wisconsin and Research Professor at Kharkov Institute of Physics and Technology, actively assisting in student and postdoctoral research projects. He has served on the Editorial Advisory Board for Journal of Nuclear Materials for three decades.

Publications—Currently more than 540 open literature publications in addition to many internal reports, chairman and lead editor of three major conference proceedings; and assistant editor on three others. Author of three highly cited reviews on various aspects of radiation damage.