

CURRICULUM VITA

Kofi Korsah

P.O. Box 2008, Oak Ridge National Lab, Oak Ridge, Tennessee 37831-6054 Wk: 865-576-6064, Fax: 865-574-9407, E-mail: korsahk@ornl.gov

Professional Experience:



Dr. Kofi Korsah is a senior Research and Development staff member in the Sensors and Embedded Systems Group at Oak Ridge National Laboratory, where he has been employed since 1990. Dr. Korsah has a multi-disciplinary background in electrical and nuclear engineering, with over thirty four years' experience in reactor instrumentation, data acquisition systems, systems integration, sensor research, and development of hardware/software systems for both nuclear and non-nuclear applications. Dr. Korsah has been the lead or co-principal investigator for several Nuclear Regulatory Commission sponsored research on the potential safety implications and qualification issues associated with the application of digital and advanced technologies in nuclear power plants. Several of his research activities for the NRC have contributed to setting new regulatory guidelines or revising old ones.

Kofi Korsah was a member of the Reactor Review Committee for the ORNL *High Flux Isotope Reactor* for over five years, and has served on several IEEE working groups for standards development (e.g., IEEE Std. 7-4.3.2, IEEE Std. 323), the latest being the secretary for P1682 that developed the standard for the qualification of fiber optic cables, connections, and splices for use in safety systems in nuclear power plants. He also served for almost 5 years as an Instrumentation and Controls engineer supporting the Tokamak Cooling Water Systems Group in the design of the Tokamak Cooling Water System for the International Thermonuclear Experimental Reactor (ITER) under construction in Cadarache, France.

Dr. Korsah has over 80 publications in journals, conference proceedings and technical reports. He is the principal inventor in two patents and a co-inventor in one patent.

Education:

- B.Sc. (Electrical Engineering), University of Science and Technology; 1973.
 - M.S. (Nuclear Engineering), University of Missouri, Columbia; 1980.
 - PhD (Nuclear Engineering), University of Missouri, Columbia; 1983.
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Patents and Awards:

ACADEMIC:

U.S. Patent No. 7,608,824, [Kofi Korsah, Larry Baylor, John Caughman, Philip Rack and Ilia Ivanov], "Doped Carbon Nanostructure Field Emitter Arrays for Infrared Imaging."

U.S. Patent No. 6,044,332, [Kofi Korsah, William Dress, Cheg Yu Ma and Michael Moore], "Surface Acoustic Wave Harmonic Analysis."

U.S. Patent Pending, [Roger Kisner, John Simpson, Kofi Korsah and Alexander Melin], "Vacuum Microtriode for Harsh Environment Applications."

IEEE (Institution of Electrical and Electronics Engineers) Service Award: For serving as secretary for IEEE Standards Development Working Group on P1682, "Draft Trial-Use Standard for Qualification of Class 1E Fiber Optic Cables, Terminations and Field Splices for Use in Nuclear Power Plants," 2011.

Best Author Award, 1994 Joint POWID/EPRI Conf., Orlando, FL.; **Session: Safety System Upgrades for Nuclear Plants.**

Best Paper Award, Nuclear Radiation Physics Category, American Nuclear Soc. 18th Annual Midwest Student Conference, Iowa State University, 1981.

COMMUNITY INVOLVEMENT:

Oak Ridge National Laboratory Award for Community Service, 2007.

William Townsend Anderson Outstanding Volunteer Award, Board of Probation and Parole, East Tennessee Region, 2005.

Selected Publications:

Kofi Korsah et. al., "Instrumentation and Control Design of the Tokamak Cooling Water System," 8th *International Topical Meeting on Nuclear Plant Instrumentation, Control, and Human-Machine Interface Technologies*, (NPIC&HMIT 2012), July 22-26, 2012.

K. Korsah et. al., "Emerging Technologies In Instrumentation and Controls and Their Potential Regulatory Implications for Nuclear Power Plants," *Sixth International Topical Meeting on Nuclear Plant Instrumentation, Control, and Human-Machine Interface Technologies* (NPIC&HMIT 2009), April, 2009.

Sacit M. Cetiner, Kofi Korsah, Michael Muhlheim, "Survey on Failure Modes and Failure Mechanisms in Digital Components and Systems," *Sixth International Topical Meeting on Nuclear Plant Instrumentation, Control, and Human-Machine Interface Technologies* (NPIC&HMIT 2009), April, 2009.

K. Korsah et. al., "Instrumentation and Controls in Nuclear Power Plants: An Emerging Technologies Update," NUREG/CR- 6992, Nuclear Regulatory Commission, December 2010.

R.A. Kisner, K. Korsah, et. al., "Design Practices for Communications and Workstations in Highly Integrated Control Rooms," NUREG/CR- 6991, Nuclear Regulatory Commission, September 2009.

M. K. Howlader, K. Korsah, P. D. Ewing, "Technical Basis for Regulatory Guidance on Implementing Wireless Communications in Nuclear Facilities," ORNL/TM-2007/210, U.S. Nuclear Regulatory Commission, November 2007.

K. Korsah, M. D. Muhlheim, and D. E. Holcomb, "Industry Survey of Digital I&C Failures," ORNL/TM-2006/626, U. Nuclear Regulatory Commission, May 2007.

Kofi Korsah, R.T. Wood, Eva Freer, and Christina Antonescu, "Emerging Sensor and I&C Technologies for Nuclear Power Plants," Proceedings of the 5th Nuclear Power Plant Instrumentation and Control, and Human-Machine Interface Technologies, NM, 2006.

Roger Kisner, John Wilgen, P.D. Ewing, and Kofi Korsah, "Regulatory Guidance for Lightning Protection in Nuclear Power Plants," Proceedings of the 5th Nuclear Power Plant Instrumentation and Control, and Human-Machine Interface Technologies, NM, 2006.

R. T. Wood, S.A. Arndt, J.R. Easter, K. Korsah, J.S. Neal, E.L. Quinn, and G.W. Remley, "Advanced Reactor Licensing: Experience with Digital I&C Technology in Evolutionary Plants," NUREG/CR-6842, April 2004.

Kofi Korsah, Roger Kisner, Lynn Boatner, Hans Christen, Deidre Paris, "Preliminary Investigation of KTN as a Surface Acoustic Wave Infrared/Thermal Detector," *Sensors and Actuators, A: Physical*, Vol. 119, No. 2, p 358-364, April 2005.

B. J. Kaldenbach, M. R. Moore, P. D. Ewing, W. W. Manges, C. L. Dillard, K. Korsah, R. A. Kisner, "Assessment of Wireless Technologies and Their Application at Nuclear Power Plants," NUREG/CR-6882, July 2005.

K. Korsah, Richard T. Wood, Saliman Isa, Christina Antonescu, "Qualification of Microprocessor-Based Commercial-off-the-Shelf (COTS) Equipment for Nuclear Power Plant Safety System Applications," Proceedings of the 4th International Topical Meeting on Nuclear Plant Instrumentation, Control, and Man/Machine Interface (NPIC & HMIT 2004), September 19-22, 2004.

Roger Kisner, J.B. Wilgen, P.D. Ewing, K. Korsah, and M.R. Moore, "Basis for Lightning Protection of Nuclear Power Systems," proceedings of the 4th International Topical Meeting on Nuclear Plant Instrumentation, Control, and Man/Machine Interface (NPIC & HMIT 2004), September 19-22, 2004.

Kofi Korsah and Christina Antonescu, "Evaluating "New" Instrumentation and Control Technologies for Safety-Related Applications in Nuclear Power Plants," *Nuclear Engineering and Design*, Vol 167, Issue 3, April 1997.

Technical Reports:

Contributor to "Application of Commercial Standards to DOE Facility Safety," *Nuclear Safety Assessment*, NEKK315, ORNL/QR/NESA-93/4, Oak Ridge National Laboratory, 4th Quarter Technical Progress Report, 1993.

Contribution as Committee Member; “1995 Annual Review of ORNL Reactors, ORNL/CF-96/08,” The Reactor Operations Review Committee (RORC), Oak Ridge National Laboratory, March 1, 1996.

Contribution as Committee Member; “1996 Annual Review of ORNL Reactors, ORNL/CF-97/39,” The Reactor Operations Review Committee (RORC), Oak Ridge National Laboratory, November 21, 1997.

K. Korsah, “Review of Surveillance and Operating Records,” *Reactor Operations Review Committee (RORC) 1997 Annual Review of ORNL Reactors*, August 1998.

Contribution as Committee Member; “SNS Target Assemblies Title I Design Review,” April 12-14, 2000, Report by Review Committee, May 8, 2000.

Contribution as Project Team Member; “Technology Assessment Report: 3-kWe Heatpipe/Stirling Concept for Mars Surface Power Applications,” ORNL/SPFT/LTR-004, June 2001

Contribution as Project Team Member; "Concept Evaluation Report: 3-kWe Heatpipe/Stirling Concept for Mars Surface Power Applications," ORNL/SPFT/LTR-003, June 2001.

Richard Lahey, Jack Brenizer, Kofi Korsah, Robert Long, Theofanis Theofanous, *Nuclear Engineering External Review Committee Report*, Purdue University College of Engineering, November 2004.