

Dan Ilas

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EDUCATION

Georgia Institute of Technology, Atlanta, Georgia
University of Bucharest, Bucharest, Romania

Ph.D., Nuclear Engineering, May 2001
M.S, Engineering Physics, June 1986

EMPLOYMENT HISTORY

Over 30 years of experience in Reactor Physics, Source Term Estimations, Radiation Shielding, Used Fuel Disposal, Charged Particle Transport, Medical Physics, Health Physics

Oak Ridge National Laboratory, Oak Ridge, Tennessee: R & D Staff (11/04-present)

The most recent and significant projects:

- Reactor physics (high temperature reactor concepts development, modeling and simulation of high temperature gas cooled reactors, benchmarks and validation activities, consulting)
- Source term estimations (neutron and gamma source estimations for isotope storage and transportation)
- Radiation shielding (dose estimations)
- Modeling and simulations (development of HIFR SCALE model, estimation of gas and neutronic poison production in HFIR beryllium reflector)
- Benchmark development activities

Georgia Institute of Technology, Atlanta, Georgia: Postdoctoral Fellow (10/03-9/04)

- Dual appointment: (1) School of International Affairs (Sam Nunn Security Fellows Program sponsored by MacArthur Foundation) on proliferation issues associated with advanced nuclear reactors and (2) Nuclear and Radiological Engineering Program, transport method for dose calculation in cancer treatment.

Louisiana State University, Baton Rouge, Louisiana: Postdoctoral Researcher (6/01-9/03)

- Development of a method-of-characteristics code for radiation therapy problems: physics associated with the transport of highly anisotropic photon beams, combinatorial geometry, and code optimization.
- Impact of neutron streaming on internal structural damage in a BWR.

Georgia Institute of Technology, Atlanta, Georgia: Graduate Research Assistant (9/95-12/98)

- Nodal diffusion methods to account for environmental effects.
- Numerical benchmarks for the effects of moderator and fuel properties on the eigenvalue for BWR lattice cells, using MCNP and NJOY.
- HELIOS library benchmarking for BWR analysis using MCNP.
- Wigner-Seitz cells via boundary perturbations.

Georgia Institute of Technology, Atlanta, Georgia: Graduate Teaching Assistant (1/99-5/01)

Institute for Nuclear Physics and Engineering, Bucharest, Romania: Researcher (6/91-9/95)

- Decommissioning of the VVR research reactor in Bucharest: neutronic calculations, radioactivity of immersed components, developed and used computer codes to process the data.
- Neutron flux spectra determination by multiple foil activation method with SAND-II.

Institute for Nuclear Physics and Engineering, Bucharest, Romania: Nuclear Engineer (11/89-6/91)

- Joint research with IPPE Obninsk, Russia on using boron carbide for fast breeder reactors control.

Institute for Nuclear Research, Pitesti, Romania: Nuclear Engineer (6/86-11/89)

- Kinetics simulation of the immersion of the shutdown system's rods for a CANDU reactor.
- Fuel burnup for a CANDU reactor using a fuel management code.
- Xenon accumulation effect on the power level for a CANDU reactor.

Canadian Nuclear Safety Commission: Consulting (10/03-06/05)

- Transport calculations using 3-D geometry transport codes for transient analysis of a postulated LOCA accident.

SYNERGISTIC ACTIVITIES

Extensive experience on prismatic high temperature reactors.

Neutronic validation of ORNL software on (HTTR) gas-cooled reactors.

Lead neutronic design on molten salt cooled concepts: SmAHTR, SmAHTR-CTC and AHTR.

Consulting for university-led (Georgia Tech) NEUP IRP project on AHTR.

Development of a database of experimental benchmarks for non-reactor applications.

SELECTED PUBLICATIONS

1. **D. Ilas**, D. E. Holcomb, J. C. Gehin, SmAHTR-CTC Neutronic Design, Proceedings of PHYSOR 2014 – The Role of Reactor Physics Toward a Sustainable Future, The Westin Miyako, Kyoto, Japan, September 28 – October 3, 2014, on CD-ROM (2014).
2. D. E. Holcomb, **D. Ilas**, B. Middleton, M. Arieta, Small, Modular Advanced High Temperature Reactor–Carbonate Thermochemical Cycle, ORNL Report ORNL/TM-2014/88, ORNL, Oak Ridge, TN, USA, March 2014.
3. A. T. Cisneros, **D. Ilas**, Neutronics and Depletion Methods for Multibatch Fluoride Salt-Cooled High-Temperature Reactors with Slab Fuel Geometry, Nuclear Technology, Vol. 183, Issue 3, page 331-340, September 2013
4. R. P. Kelly, **D. Ilas**, Verification of a Depletion Method in SCALE for the Advanced High-Temperature Reactor Nuclear Technology, Vol. 183, Issue 3, page 391-397, September 2013
5. V. K. Varma, D. E. Holcomb, F. J. Peretz, E. C. Bradley, **D. Ilas**, A. L. Qualls, N. M. Zaharia, AHTR Mechanical, Structural, and Neutronic Preconceptual Design, ORNL Report ORNL/TM-2012/320, ORNL, Oak Ridge, TN, USA, Sept. 2012.
6. D. E. Holcomb, **D. Ilas**, A. L. Qualls, F. J. Peretz, V. K. Varma, E. C. Bradley, A. T. Cisneros, Current Status of the Advanced High Temperature Reactor, Proceedings of ICAPP '12 Chicago, IL, USA, June 24-28, 2012.
7. **D. Ilas**, D. E. Holcomb, V. K. Varma, Advanced High-Temperature Reactor Neutronic Core Design, Proceedings of PHYSOR 2012 – Advances in Reactor Physics – Linking Research, Industry, and Education, Knoxville, TN, USA, April 15-20, 2012.
8. D. E. Holcomb, **D. Ilas**, V. K. Varma, A. T. Cisneros, R. P. Kelly, J. C. Gehin, Core and Refueling Design Studies for the Advanced High Temperature Reactor, ORNL Report ORNL/TM-2011/365, ORNL, Oak Ridge, TN, USA, September 2011.
9. S. R. Greene, J. C. Gehin, D. E. Holcomb, J. J. Carbajo, **D. Ilas**, A. T. Cisneros, V. K. Varma, W. R. Corwin, D. F. Wilson, G. L. Yoder Jr., A. L. Qualls, F. J. Peretz, G. F. Flanagan, D. A. Clayton, E. C. Bradley, G. L. Bell, J. D. Hunn, P. J. Pappano, M. S. Cetiner, Pre-Conceptual Design of a Fluoride-Salt-Cooled Small Modular Advanced High-Temperature Reactor (SmAHTR), ORNL Report ORNL/TM-2010/199, ORNL, Oak Ridge, TN, USA, December 2010.
10. **D. Ilas**, SCALE Code Validation for Prismatic High-Temperature Gas-Cooled Reactors, Nuclear Technology, Vol. 183, Issue 3, page 379-390, September 2013