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Michael J. Driscoll

Professor Emeritus of Nuclear Science and Engineering (Emeritus)

mickeyd@mit.edu
 617-253-4219
 617-258-8863 (fax)
 24-215

Recent News

Unlimited Energy Meets an Unlimited Resource

MIT awarded over \$1.7M in DOE Nuclear Energy University Programs grants

Learning the lessons of Fukushima

NSE publishes report on lessons learned from Fukushima-Daiichi accident

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Education

- 1966 Sc.D. Nuclear Engineering, MIT
- 1958 Graduate, Oak Ridge School of Reactor Technology
- 1955 B.S. Chemical Engineering, Carnegie-Mellon

Research

Nuclear Waste Disposal

The use of deep boreholes as a preferred alternative for disposal of nuclear high level waste – spent fuel and/or its reprocessed constituents – has been under investigation at MIT since 1990. With the apparent demise of Yucca Mountain, this alternative has taken on renewed emphasis.

Advanced Reactor and Fuel Cycle Development

Reprocessing and recycle are not a near term prospect in the US. Thus development of a cost-effective (i.e. competitive with LWRs) once-through core design for fast reactors would enable their near term deployment, hence accelerate the transition to full breeder mode operation. We have made significant progress toward this goal, but more remains to be done.

Fast reactor capital costs must also be reduced to make them competitive. MIT has pioneered in the resurrection and improvement of the supercritical CO₂ Brayton power cycle – which is projected to both significantly increase thermal efficiency and reduce capital cost compared to conventional Rankine cycle designs.

Patents

M. J. Driscoll, F. L. Bowman, "Core Catcher for Nuclear Reactor Core Meltdown Containment," Pat. No. 4,113,560, Sept. 12, 1978.

N. E. Todreas, M. J. Driscoll, P. Hejzlar, J. Tang, "Passive Pressure Tube Light Water Cooled and Moderated Reactor," Pat. No. 5,442,668, Aug. 15, 1995.

Recent Publications

1. Tingzhou Fei, M. J. Driscoll, E. Shwageraus, "A Cost-Effective Once-Through Startup Mode for SFRs," Trans. Am. Nucl. Soc., Vol. 104, June 2011.
2. K. G. Jensen, M. J. Driscoll, "Policy Issues Associated with Deep Borehole HLW Disposal," IHLRWMC 2011 Proceedings, Albuquerque, NM, April 2001.
3. Invited Journal Article: M. J. Driscoll and P. Hejzlar, "Reactor Physics Challenges in GEN-IV Reactor Design," Nuclear Engineering and Technology, Vol. 37 No. 1, Feb. 2005.
4. Book: J. W. Tester, E. M. Drake, M. J. Driscoll, M. W. Golay, W. A. Peters, Sustainable Energy: Choosing among Options, MIT Press, 2005.
5. Book: M. J. Driscoll, T. J. Downar, E. E. Pilat, The Linear Reactivity Model for Nuclear Fuel Management, American Nuclear Society, 1990.

Awards

- Ruth and Joel Spira Award for Distinguished Teaching, MIT 2001
- The Irwin Sizer Award "For the Most Significant Improvement to MIT Education," 1982
- Outstanding Teacher Award, American Society for Engineering Education, Nuclear Engineering Division, 1975

