

# NOUVEL HAY MAGAZINE

## SANS FRONTIÈRES

**La centrale nucléaire Medzamor  
dimanche 10 Mars 2024 à 10h  
(locale) : ARPA**

**ARPA**  
Armenia Research & Planning for Armenia

Dedicated service to Armenia and Diaspora since 1992  
**ARPA Institute Panel Discussion**  
On  
**The Medzamor Nuclear Power Plant and New "Advanced" Reactor Technologies for Armenia**  
Panelists: Karoun Shivan, Robert J. Budnitz, and Aray Danagoulian  
Moderator: Ani Aghajanian  
**Sunday, March 10, 2024, at 10:00 AM PDT**

**Abstract:** Major nuclear vendors are designing both large and small water-cooled reactors for different capacity needs. Small reactors feature power ratings of 100-400 MWe and have lower costs. Large reactors benefit from economies of scale, particularly for operation and maintenance at 1 to 1.6 GW. A growing number of companies are developing non-water reactors to leverage public-private support reserved for "advanced" reactor technologies. As Armenia has set 2026 as the deadline to shut down Medzamor Nuclear Power Plant (NPP), it must decide what to replace it with. The panelists will discuss nuclear power, its physics, engineering and economics, the current state of Medzamor, the situation for small reactors and their applicability for Armenia.

**Aray Danagoulian** is an Associate Professor of Nuclear Science and Engineering at MIT. He received his PhD in Experimental Nuclear Physics at the University of Illinois at Urbana-Champaign with a thesis on experiments that used real Compton scattering on the proton at 2-6 GeV, allowing to probe the proton's internal structure and to understand how it couples to external excitations. Aray worked at Los Alamos as a postdoctoral researcher, and then as a senior scientist at Passport Systems, Inc. (PSI). At PSI, Aray developed the Prompt Neutron from Photo-fission (PNPF) technique, which allows the rapid detection of shielded fissile materials in commercial cargo traffic. Dr. Danagoulian's research centers around security of nuclear physics applications, nuclear nonproliferation, technologies for treaty verification, nuclear safeguards, and cargo security.

**Dr. Karoun Shivan** is a professor of nuclear science and engineering at Massachusetts Institute of Technology and Co-Director of Reactor Technology Course for Utility Executives by National Academy for Nuclear Training. Director of Accident Tolerant Fuel Integrated Research Project and PI of MIT ARC-20 project. His research focuses on innovations in reactor design and fuel engineering. In 2021, Prof. Shivan released the first open-source tool for cost estimation of existing and advanced nuclear architectures which is utilized by policy makers and the energy community worldwide. He is a consultant to the nuclear industry on digital engineering, cost, safety, use of ARMC, and fuel technology. Karoun received his PhD from MIT in 2012. He has supervised over 50 graduate theses and is supervising 17 graduate students. He is the recipient of multiple awards in Reactor Technology.

**Dr. Robert J. Budnitz** is an expert in nuclear-reactor and radioactive-waste safety. A member of the National Academy of Engineering and is still active, although retired from the University of California (UC), Lawrence Berkeley National Laboratory. Robert has worked at the UC, Lawrence Livermore National Laboratory, and in Washington, DOE Office of Civilian Radioactive Waste Management to develop a Science/Technology Program. Dr. Budnitz has also worked as a private consultant in Berkeley CA, in the U.S. Nuclear Regulatory Commission as Deputy Director and Director of the NRC Office of Nuclear Regulatory Research. His Ph.D. is in experimental physics from Harvard, and he is the author of hundreds of articles and publications and a member of numerous technical and professional organizations. He was deeply involved in the restart in 1996 of the Medzamor NPP. He served 1993-2007 as the US member of the Nuclear Energy Safety Council of the President of Armenia.

ARPA INSTITUTE, 18206 Miranda St, Tarzana CA 91356, USA - Phone (818) 453-0623  
Dhambajgubh 12760 Dambajgubh Yeghordi@arpa.am Yeghordi@arpa.am 186 14 qst 47, Teyrah 0000, Mar-1-2024 16:43:55

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