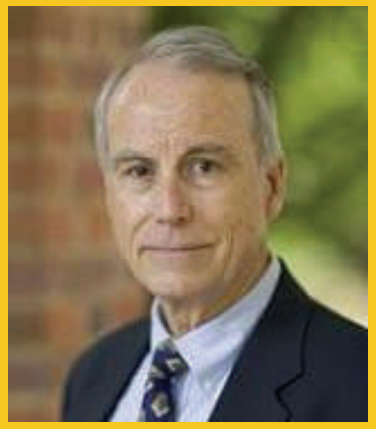
DISTINGUISHED LECTURER SERIES

VCU
MECHANICAL ENGINEERING

THE GAS CENTRIFUGE AND NUCLEAR WEAPONS PROLIFERATION



Professor Houston G. Wood
University of Virginia

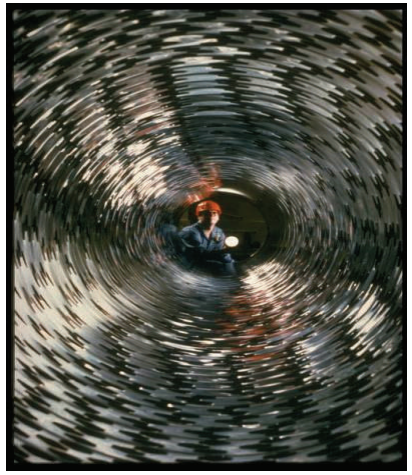
13 April 2009
Social Hour: 11:30-12:00 noon
Seminar: 12:00-1:00 pm
Room E2214
Engineering East Hall

ABSTRACT

The controversy surrounding the Iranian enrichment program and the exposure of a supplier network in 2004 around Pakistani scientist A.Q. Khan has propelled the centrifuge to the forefront of the nonproliferation debate. The primary means to halt nuclear proliferation is currently focused on measures that emphasize technology denial and export controls. Yet, the centrifuge plays a central role in the civilian nuclear fuel cycle, making denial strategies to countries that have signed IAEA safeguard regulations difficult. All enrichment facilities recently built, under construction, and planned are based on this one technology. Sustainable nonproliferation strategies will have to reconcile with the fact that a highly sensitive technology is also the workhorse of the nuclear energy sector.
In this talk, I will briefly describe the journey of gas centrifuges from classified government laboratories to the front lines of proliferation. I will then explain the physical aspects of the centrifuge, which make it more difficult to control and to safeguard than other enrichment technologies. Finally, I will sketch out prospects for control, including a discussion of current ideas and proposals. I conclude by identifying the space in which a future solution to the centrifuge challenge might be found.

BIO

Houston G. Wood is Professor of Mechanical and Aerospace Engineering at the University of Virginia. He earned his B.A. and M.S. degrees in mathematics from Mississippi State University, and his Ph.D. in applied mathematics from the University of Virginia. He worked as a development engineer (1967–1973) and as manager of the Centrifuge Physics Department (1977–1981) at Oak Ridge Gaseous Diffusion Plant (ORGDP) in the area of uranium enrichment. He was a research engineer (1973–1977) at UVA and worked on the U.S. Department of Energy gas centrifuge project. He joined the UVA faculty in 1981. His research interests involve many areas of fluid dynamics, centrifugation, separation theory, and computational mathematics. Over the last 15 years, he has been active in teaching, lecturing and consulting on issues relating to nuclear nonproliferation. He was Visiting Scientist at Commissariat a l'Energie Atomique, Saclay, France in 1996 and at Oak Ridge National Laboratory, Oak Ridge, TN in 2004. From July through December 2007, he was Visiting Research Scholar at Princeton University in the Woodrow Wilson School and the Program on Science and Global Security.



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