

Abstract Submitted  
for the DPP09 Meeting of  
The American Physical Society

**ICF Hybrid Burner Using Tritium-Lean Targets** GEORGE MILEY, XIAOLING YANG, SUNG-JIN KIM, University of Illinois, HEINRICH HORA, U of New South Wales, Australia — A near-term ICF driven actinide burner has gained much interest.. However, the D-T ICF approach with tritium breeding gives a low support ratio. We propose here using fast ignition of tritium-lean targets to obtain a higher fraction of useful neutrons by reducing tritium-breeding requirements while lowering neutron-induced material damage [1]. This approach appears feasible as simulations show fast ignited tritium-lean targets use only a modest added input-energy over DT targets [2, 3]. Further, discovery of the “block ignition” concept is even more encouraging [3]. Thus we suggest the added time to go directly to tritium lean ICF burners (vs. D-T) is minimal. The presentation reviews physics and technology issues for development of a competitive actinide burner.

[1] M. Ragheb, et al., “Alternate approach to ICF with low tritium inventories and high power densities”, *J. Fus. Energy* **4**, 339-351 (1985).

[2] G. N. Miley, “Tritium-Lean Fusion Reactors Revisited”, *ANS TOFE Conference*, San Francisco, CA, Sept. 2008.

[3] G.H. Miley, et al., “Reduction of Threshold for Laser Fusion Ignition at Nonlinear Force Driven Block Acceleration”, *ANS TOFE Conference*, San Francisco, CA, Sept. 2008

George Miley  
University of Illinois

Date submitted: 27 Aug 2009

Electronic form version 1.4