SEMINAR* ANNOUNCEMENT

Heat and Mass Transfer in Fusion Energy Applications: From the Very Cold to the Very Hot

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Date: **FRIDAY, JANUARY 25TH, 2008**
Time: **12:00 p.m. – 1:00 p.m.**
Place: **6764 Boelter Hall (Rice Room)**
(Refreshments available at 11:30 p.m.)

Abstract: Realization of fusion energy imposes considerable challenges in the areas of engineering, physics and material technology. This is typified by the heat and mass transfer aspects, which cover a wide range of conditions, from the very cold to the very hot.

This seminar highlights this wide range of challenges associated with the heat and mass transfer aspects of fusion technology. On the cryogenic side, examples of current R&D results on IFE target layering and survival are presented. On the high temperature side, the thermo-mechanical behavior of a dry IFE chamber armor under the challenging conditions imposed by the photon and ion fluxes is described, along with some of the possible solutions to provide an acceptable armor lifetime. High heat flux challenges encountered in MFE are also summarized, with a focus on promising He-cooled tungsten divertor concepts, in particular the T-tube concept recently developed as part of the ARIES-CS study.

Biosketch: Dr. René Raffray received his doctoral degree from the Department of Mechanical Engineering at the University of California, Davis in 1985. After an eight-year period as a research engineer in the Fusion Science & Technology Center at UCLA, he was nominated to work as part of an international team at the Max-Planck-Institute in Garching, Germany on the design and R&D of the ITER experimental fusion reactor. He joined the Mechanical and Aerospace Engineering Department and the Center for Energy Research at the University of California, San Diego in January 1999 where he is a Research Scientist and Lecturer. He is currently the Engineering Leader of the ARIES fusion advanced design program and the Chamber Task Coordinator for the High Average Power Laser inertial fusion energy program. He has numerous publications on fusion engineering, design and material issues. His current research and academic interests include:

- Design and analysis of advanced fusion power core components.
- Numerical thermo-fluid model of high porosity media for heat transfer enhancement in high heat flux applications.
- Design and analysis of chamber armor material under high transient photon and ion fluxes.
- Inertial fusion energy target layering and survival during injection.

*For more seminar details, please contact Ms. Kyleen Bromley at kyleen@fusion.ucla.edu (310-**825-2389**)*

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