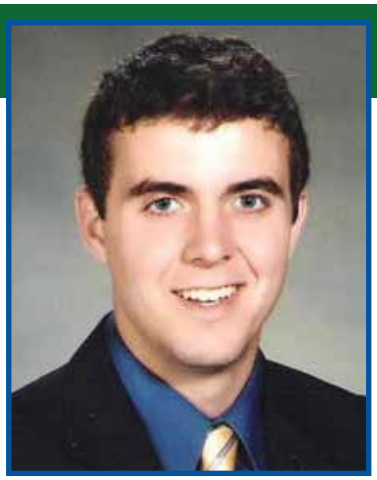

Peter R. Fiflis

Graduate Institution: University of Illinois - Urbana -Champaign

Graduate Discipline: Nuclear, Plasma, and Radiological Engineering

Hometown: Indian Head Park, IL

Relevant SC Research: Fusion Energy Sciences

Research Interest:

Nuclear fusion is a power source that could eventually liberate our world from the current energy crisis; provided we can design a reactor that produces more energy than it consumes that will last for many years and is cost-effective. Hurdles in plasma confinement, plasma heating, and first-wall materials among others have made the commercialization of nuclear fusion a difficult task. It is these challenges coupled with the promise of an abundant energy source that has drawn me to nuclear fusion. I currently work at the Center for Plasma Material Interactions at the University of Illinois. My project involves investigating the feasibility and proper design of an electrostatic lithium injector for fusion devices. It is thought that liquid lithium walls would be the best material for the innermost wall of a tokamak device because of its effect on the edge plasma physics among other reasons. Injecting lithium into a fusion device is then the challenge. My project seeks to solve this problem by injecting a charged aerosol of lithium into a fusion device and by deflecting the aerosol electrostatically, causing the lithium to deposit on the walls of the tokamak.

About Me:

I am currently a first year graduate student at the University of Illinois Urbana-Champaign. I am in pursuit of first a Master's and subsequently a Ph.D. in Nuclear Plasma and Radiological Engineering with a specialization in Plasma Fusion. My research on campus is performed at the Center for Plasma Material Interactions. The Center performs research in a number of areas including but not limited to nuclear fusion, semiconductor fabrication, and atmospheric pressure plasmas. My research interests lie in nuclear fusion, particularly in the applications of liquid lithium as a component of the first wall/divertor regions of a magnetic confinement fusion device. I am involved primarily with the research of an electrostatic lithium injector, however I am also involved with the measurement of Seebeck coefficients of lithium and lithium tin mixtures, possibly a lithium tin eutectic for use in a divertor concept developed at the University of Illinois which employs thermoelectric magnetohydrodynamics to self-pump a lithium coolant along the divertor. Also, I am investigating several other materials properties of lithium, in example, the wetting properties of lithium on several materials such as stainless steel and molybdenum, as well as the compatibility of lithium with certain magnet materials such as samarium cobalt and neodymium. Post-graduation, I would like to be on the cutting edge of magnetic confinement fusion, and so, after obtaining a Ph.D., I would want to participate in research on ITER, currently under construction in the south of France. It is the most advanced fusion experiment so far and I hope to participate in research on plasma-wall interactions, and magnetic confinement of the fusion plasma in this device. However, my interests do not lie solely in fusion. As such, I would also like to participate in the research and design of commercial products that employ plasmas. Some of the more common devices of today are plasma televisions and fluorescent lights, hopefully in the future this will expand to include a range of devices. My favorite hobby is playing soccer. Through my undergraduate career and continuing on to my graduate career, I have participated in intramural soccer as a defender, and I try to make it out to the fields whenever possible. As an undergraduate, I was also involved with a fraternity. As a member of Phi Kappa Psi Fraternity, I served as terms as president, treasurer, corresponding secretary, and athletic chair.