



Laboratory Session Summary (1 of 2)

- **TMAP-7 Simulation of D₂ Thermal Release Data from Be Co-Deposited Layers (R. Doerner for M. Baldwin)**
 - Presented TDS data of bake-out efficacy (513 & 623 K) and thermal transient loading (10 ms) for reducing D inventory in 1 μm thick films
 - Modeling of TDS by TMAP found good agreement with 0.80 & 0.98 eV traps
 - Simulations indicate that removal in ITER will be challenging (baking >> transient)
- **Isotope Exchange Experiments: Tungsten with Ion Induced Damage in PISCES (G. Tynan for J. Barton)**
 - Examined exchange (10^{26} m⁻² D, then various fluences H; 100 eV & < 373 K) in W & W with displacement damage (.4/4/40 dpa)
 - Affects near surface (3.5 μm); damaged zone (retention ↑; exchange efficiency ↓)
 - W and Be show similar fractional D retained as a function of H fluence
- **Hydrogen behavior in materials and on surfaces (R. Kolasinski)**
 - Precipitation / bubble growth in hot rolled and ITER tungsten very different (in TPE)
 - Continuum bubble growth model successfully applied to damaged SC-W exp.
 - Surface ion scattering used to identify H in hollow sites at low coverage (0.2 H/Be)
- **SNL/CA Collaborations (D. Buchenauer)**
 - Showed design for plasma permeation stage; GIXRD showing low strain in W fuzz





Laboratory Session Summary (2 of 2)

■ PFC activities in STAR (M. Shimada)

- Refurbishment of ion implantation exp. completed (+TPE → 10^5 range in fluence)
- Two new trapping models (multiple & bimodal lognormal trap) added to TMAP4
- Annealing of n-irradiated W shows two peaks in TDS spectra (high T peak attributed to neutron induced vacancies and low T peak to precipitation in voids)

■ Update on SLiDE (D. Ruzic)

- Presented thermocouple, IR camera, and visible video evidence of TE driven Li flow in trenches (dependence on direction and magnitude of B)
- 3-D TEMHD modeling of flow velocity matches experiment (~ 0.2 m/s)
- Design will be tested in 2T field tokamak (HT-7) this August

■ Lithium's Effects on the Chemical Sputtering of Carbon (D. Andruczyk)

- IIAX modified to include allow Li deposition and RF plasma induced chemical sputtering measurements without air exposure (magnetic sector RGA)
- Observe 60-70% suppression of CH_4 from Li coated ATJ graphite at 473 K (but much lower depending on conditions)
- Li wetting of boronized molybdenum increases with T and repeated cleaning/Li

