Summary of Plasma Edge/PMI modeling – June '12 PFC Meeting

- **Analysis of PFC erosion in DIII-D, C-MOD and ITER; Brooks**
  - WBC-REDEP-ITMC agrees well with DIII-D DiMES sputtering/redep. for Mo; discrepancy for C-Mod W sputtering/redep. but sample exposed over months
  - Projection to ITER for high-Z contamination encouraging

- **Li radiation, snowflake ELM mitigation, & blob modeling; Rognlien**
  - Lithium divertor radiation can induce plasma detachment; abrupt transition
  - Snowflake divertor can show peak ELM heat-flux reduction; null-point mixing

- **Core carbon reduction via divertor gas injection in NSTX, Meier**
  - UEDGE shows qualitative reduction of core carbon on NSTX by D_2 gas puffing
  - C sputtered source remains same, but reduction in midplane density

- **Melt layer splashing and erosion losses of PFCs; Miloshevsky**
  - ELMs, disruptions can cause PFC melt layers; minimize or eliminate
  - Viscosity destabilizes melt layer yielding drops; vaporization stabilizing

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- **Integrated modeling of plasma instability events; V. Sizyuk**
  - HEIGHTS can now model entire SOL domain & has local mesh refinement
  - NSTX and ITER MHD equilibrium geometries are included in 3D

- **Kinetic plasma/neutral simulations with XGC0-DEGAS2; Stotler**
  - Coupling utilizes intermediary moment representation of kinetic data
  - Demonstration by DIII-D H-mode with "puff & pump" particle source

- **Simulation of thermoelectric MHD in molten lithium; Curreli**
  - Liquid metal flow driven by self-consistent JxB forces in metal trenches
  - Temperature gradients help control direction and magnitude of flow, and E-field boundary conditions carefully included