

# Key Issues and Planned Task for FY99

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## Su-Li: R/D needs

- Material preparation.

- Structural material screen test

Put? Natural convection loop?

- Tritium solubility measurement

- Li, Su vapor pressures measurement

- Thermal properties measurement

- Sputtering coefficient calculation/measurement.

- ~~Li~~ Su-Li / water and air reactivity.

- Su cross section confirmation.

## APGX Activities

Material / Safety / Tritium program support  
IFE interaction  
International collaboration

# APPLE Concept

- **Key Issues**
  - Tritium breeding and recovery
  - Requirements for life time structure
  - Heat transfer to secondary system
  - Mechanical design (possible ways to eliminate the baffles)#
  - Penetration cooling
  - Power conversion



## Work Plan and Schedule Tasks for 99:

- Literature survey and code development of heat transfer from solid particles to a solid wall in vacuum
- Mechanical design of the system
  - Particle inlet and exit system
  - Particle flow control
  - Penetration cooling and shielding
  - Start up
  - Divertor system
  - Flow stability and distribution



- Tritium system
  - Tritium production
  - Tritium recovery
  - Tritium containment
  
- Neutronics and shielding
  - Structural and Shield material selection
  - Nuclear heating and damage
  - Structure and shield life time
  - Activation and decay heat
  - Vacuum vessel and magnet shielding



- Plasma interface issues:
  - Determine the effects to plasma from Li, O, and T back diffusion
  - Disruption effect
- Power conversion design:
- Safety:

