# Japan-US Collaboration Program:

# PHENIX (FY2013-2018) Overview

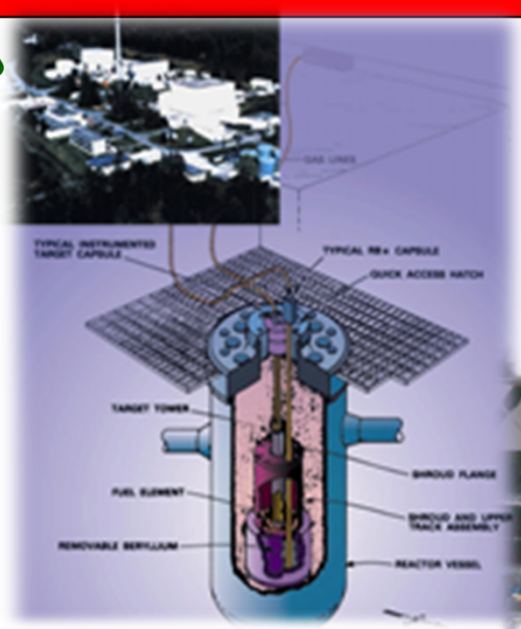
PFC evaluation by tritium Plasma, HEat and Neutron Irradiation eXperiments

**Goal: to evaluate the feasibility of He gas-cooled divertor with tungsten material (neutron-irradiated) armor for DEMO reactors**

***Task 1*** **Heat Load, Heat Transfer, *System Evaluation***
**(PAL in ORNL and He-loop in Georgia Inst. Technol., GT)**

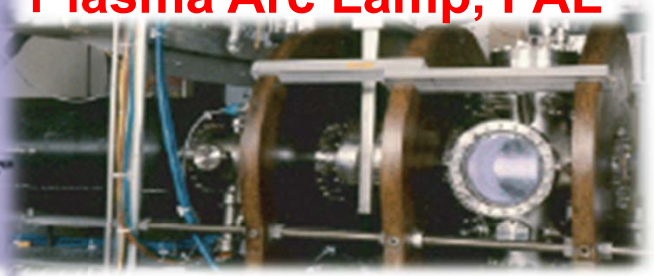
**Material Properties**

**Task 2**
**Neutron-irrad. Effects on W, Microstructures Thermomech. Properties (HFIR in Oak Ridge Natl. Lab., ORNL)**



**High Flux Isotope Reactor, HFIR**

**Plasma Arc Lamp, PAL**



**Tritium Plasma Experiment, TPE**

**Tritium Behavior**
**Neutron-irradiated samples**

***Task 3*** **(TPE, Idaho Natl. Lab., INL)**
**D/T retention and permeation**