## Pre-qualification of Plasma Facing Components of Divertor Target Elements for ITER like Tokomak Application

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Qualification of Tungsten (W) & Carbon (C) based Plasma Facing Components (PFCs) is an important R&D area in fusion research [1-3]. Pre-qualifiation tests for brazed joints between W-CuCrZr and C-CuCrZr using NDT (IR Thermography & Ultrasonic Test) and Thermal fatigue test are attempted. Mockups having good quality brazed joints of tungsten and carbon based PFCs were identified using NDT. Subsequently, Thermal Fatigue test was performed on the identified mock-ups. All brazed tiles of tungsten based PFC mock-ups could withstand thermal fatigue test, however, few tiles of graphite based PFC mock-up were found detached. Thermal & Structural analyses of mockups are performed using Finite Element Analysis (ANSYS) software to simulate the thermal hydraulic condition with 10MW/m<sup>2</sup> uniform heat flux. Details about experimental and computational work are presented here.



Figure No.1: Model of PFC test mockup arrangement for thermal cyclic test

[1] V. Barabash et.al., J. Nucl. Mater. 283-287, 2000, 1248-1252.

- [2] I. Smid et.al., J. Nucl. Mater.258–263, 1998, 160–172.
- [3] M. Merola et.al., J. Nucl. Mater. 283-287, 2000, 1068-1072.