Fabrication & Characterization of tungsten & graphite based PFC for Divertor Target Elements of ITER like tokomak application

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The development of the fabrication technology of macro-brush Tungsten & Carbon (Graphite & CFC) plasma facing components (PFC) for ITER like tokomak application is presented. The fabrication of qualified joint of PFC is still a requirement for fusion tokomak [1-3]. Vacuum brazing route has been employed for joining of W/CuCrZr and C/CuCrZr. OFHC copper casting on tungsten tiles was performed followed by machining, polishing and ultrasonic cleaning of the samples prior to vacuum brazing. The W/CuCrZr & C (graphite)/CuCrZr based test mockups were vacuum brazed using silver free brazing alloys. The mechanical shear and tensile strengths were evaluated on W/CuCrZr & Graphite/CuCrZr brazed samples at the joint interface. The micro-structural examination of the joints was carried out using SEM & EDX. The phase analysis was also made using XRD in the joint region. The details of fabrication & characterization procedure for macro-brush tungsten & carbon based PFC would be presented.

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