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Applications of a Nd:YAG Laser for In-Situ Removal of Tritium from Plasma Facing Components in a Fusion Reactor Environment[1] PAUL SEDITA, Canandaigua Academy, CHARLES GENTILE, Princeton Plasma Physics Laboratory, CHRISTINA MCGAHAN, Gettysburg College — Studies from TFTR and JET have indicated that long term retention of tritium in plasma facing components account for a significant fraction of the tritium inventory; thus requiring periodic removal of T interned within these first wall components. This investigation will determine the efficacy of removing tritium in an in-situ fashion from co-deposits layers in PFC's employing a continuous wave 325 w Nd:YAG laser. The laser is configured to rapidly heat first wall surfaces using a rastering motion to effectively scan the exposed surfaces within the target area. The top 100 μm of the target surface is expected to transiently heat up to $\sim$ 1000 C within several seconds, subsequently releasing the trapped (un-expended) tritium for re-use within the fusion fuel cycle. The presentation will discuss the efficacy of this method using empirical data (destructive and non-destructive measurements) from pre and post surface laser heating.

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