Abstract Submitted
For 41st Annual Meeting, APS Division of Plasma Physics
November 15-19, 1999
Seattle, Washington

Sorting Category: 5.1.1.5 (Theoretical)

Impurity Generation from Actively Cooled Plasma-facing Components J. HOGAN, ORNL[1], C. DeMICHELIS, D. GUILHEM, R. MITTEAU, CEA-Cadarache – The presence of intrinsic impurity concentrations (predominantly carbon) is a major factor affecting the feasibility of advanced tokamak configurations, such as those with internal barriers For Tore Supra the 3-D BBQ code calculates intrinsic impurity transport in the scrape-off layer and core pedestal region of the plasma Impurity generation rates are treated with an extension of the CEA CASTEM-2000 finite-elements thermal and mechanical analysis code. Extensions of the CASTEM-2000 code also permit calculation of intial values for BBQ of re-emitted energy and mean free path of sputtered impurities. Examples are presented here of physical sputtering impurity generation distributions for the full toroidal limiter (CIEL) which is to be installed in Tore Supra in the near future. The presence of field ripple and plasma shift makes this a 3-D problem. A detailed comparison is presented of chemically sputtered fluxes from the neutralizer of the Tore Supra outboard limiter with rates previously published by Mech et al and J. Roth. Higher hydrocarbon generation and transport rates (using the newly formulated C_nD_m break up rates of Allman et al) are compared with those from CD_4.

[1]Research supported in part by USDOE Contract DE-AC05-96OR22464.

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Date submitted: July 21, 1999 Electronic form version 1.4