

## Assessing material migration through $^{13}\text{C}$ injection experiments

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### Abstract

To mimic a localized impurity source for materials migration studies,  $^{13}\text{CH}_4$  has been injected into AUG, DIII-D, JET, JT-60U and TEXTOR at a single location into repeat, well-characterized plasmas, making for much more interpretable data than campaign-integrated erosion and deposition. Such studies have shown convincingly that for single null configurations, material is likely to migrate from the wall to the inner divertor creating tritiated co-deposits there. It has also indicated that for an unbalanced double-null configuration similar to ITER's the sputtered wall material is likely to create codeposits on the blanket wall rather than the divertor; this has implications for ITER tritium retention in Be codeposits since the wall can only be baked to  $240^\circ\text{C}$ . The location and magnitude of tritium codeposition in the 1997 JET DTE was not as expected from the 1991 PTE. It is recommended that  $^{13}\text{C}$  or other tracer experiments be performed in ITER as early as possible.

PACS numbers: 52.25Vy, 52.40.Hf, 52.40Kh, 52.55Fa