

Core impurity transport has been investigated for a variety of confinement regimes in Alcator C-Mod plasmas from x-ray emission following injection of medium and high Z materials. In Ohmic L-mode discharges, impurity transport is anomalous ( $D_{\text{eff}} \gg D_{\text{nc}}$ ) and changes very little across the LOC/SOC boundary. In ICRF heated L-mode plasmas, the core impurity confinement time decreases with increasing ICRF input power (and subsequent increasing electron temperature) and increases with plasma current. Nearly identical impurity confinement characteristics are observed in I-mode plasmas. In EDA H-mode discharges the core impurity confinement time is much larger, but exhibits a similar scaling with plasma current, although there is a covariance with the density. There is a strong connexion between core impurity confinement time and the edge density gradient. Central impurity density profiles in stationary regimes are generally flat, in spite of large amplitude sawtooth oscillations, and there is little evidence of impurity convection inside of  $r/a = 0.3$ .