IMPURITY SOURCES
DURING LOWER-HYBRID HEATING ON ALCATOR C

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Abstract: Impurity source mechanisms that appear during the injection of Lower-Hybrid frequency waves to heat the Alcator C tokamak are described. Si is a dominant impurity in these experiments, where SiC was the limiter surface material. At low values of injected power, the silicon source rate is dominated by physical sputtering. As the amount of injected power is raised, evaporation becomes the primary source for impurities entering the plasma. Measurements of Si line emission from the plasma, as well as other central and edge parameters are presented as functions of injected rf power.

1. Introduction

The study of auxiliary heated, tokamak fusion plasmas has become increasingly important over the past decade in light of the technical difficulty of reaching fusion conditions with ohmic-heating alone. With the increased usage of auxiliary heating has come the realization that these tokamak plasmas often have different confinement and cleanliness characteristics in comparison to ohmically-heated plasmas. In particular, studies of radio-frequency (rf) wave heated plasmas have unveiled a host of phenomena