

Update on the VICTER code for Modeling Gridded, Spherically Symmetric IEC Devices

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For the last several years we have been developing a computer code for modeling spherically symmetric, gridded IEC devices; this code has now been named VICTER (Volterra Integral Code for Transport in Electrostatic Reactors). It is based on an integral equation formulation^{1,2} of ion and neutral particle transport in the moderate pressure (0.1-5 mTorr) range. Various molecular and atomic processes (charge exchange, ion impact ionization, and dissociative processes) between deuterium ions (D^+ , D_2^+ , and D_3^+) and the background D_2 gas are included. Recent improvements to the code include: (1) a revised calculation of the detailed energy spectra of the various ion, atomic, and molecular species as a function of radius that removes some earlier inconsistencies, (2) a revised simulation of the FIDO diagnostic, and (3) the addition of negative ions created by charge transfer processes. These improvements, along with ongoing efforts to compare the code with experimental results^{3,4,5} on the Wisconsin IEC device (HOMER), will be presented.

Research supported by the US Dept. of Energy under grant DE-FG02-04ER54745.

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