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A volume averaged global model for inductively coupled HBr/Ar plasma discharge SANG-YOUNG CHUNG, DEUK-CHUL KWON, HEECHOL CHOI, MI-YOUNG SONG, National Fusion Research Institute — A global model for inductively coupled HBr/Ar plasma was developed. The model was based on a self-consistent global model had been developed by Kwon et al., [J. Appl. Phys. 109, 073311 (2011)] and a set of chemical reactions in the HBr/Ar plasma was compiled by surveying theoretical, experimental and evaluative researches. In this model vibrational excitations of bi-atomic molecules and electronic excitations of hydrogen atom were taken into account. Neutralizations by collisions between positive and negative ions were considered with Hakman's approximate formula achieved by fitting of theoretical result. For some reactions that were not supplied from literatures the reaction parameters of Cl_2 and HCl were adopted as them Br_2 and HBr , respectively. For validation calculation results using this model were compared with experimental results from literatures for various plasma discharge parameters and it showed overall good agreement.

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