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Dynamics Of Three-Body Dissociative Recombination Of Dihydrides

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Abstract

Dissociative recombination of tri-atomic dihydrides, e.g., H_2D^+, CH_2^+, NH_2^+ and H_2O^+ show a large propensity for break up into three atoms. The three-body yields for these cases ranges from 60 to 80%. In the cases of CH_2^+, NH_2^+, and OH_2^+ sufficient energy is released to yield the first excited electronic states of C, N, and O. We determine (1) the fraction going to the ground and excited states; (2) the distribution of recoil energies; and (3) the angular distribution of the two H atoms for each state of the center atom. The work was done at CRYRING at Manne Siegbahn Laboratory in Stockholm and used modified imaging technique that will be described.