

Abstract Submitted  
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**Dissociative Recombination of the Rare Gases** J. ROYAL, V. NGAS-SAM, A.E. OREL, Department of Applied Science, University of California at Davis — We report cross sections for the dissociative recombination of the  $\text{He}_2^+$ ,  $\text{Ne}_2^+$  and  $\text{Ar}_2^+$  molecular ions following collisions with low energy electrons. Dissociative recombination of the rare gases are important processes in the ionosphere as well as laboratory plasmas and gaseous discharges. This research will explore the similarities and differences between the three processes as well as the trend in the DR cross section as the atomic mass increases. The energy positions and autoionization widths of these doubly excited dissociative states are obtained from electron scattering calculations using the Complex Kohn Variational method. The dissociation dynamics is studied using either multichannel quantum defect theory (MQDT), discrete variable representation (DVR) with exterior complex scaling (ECS), or time-dependent wave packet methods. The calculated cross sections will be compared to available experiment. Work supported by the NSF PHY-02-44911 and The Center for Biophotonics, an NSF Science and Technology Center PHY 0120999, and NATO science program PST.GLG.9794033.

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