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Abstract for an Invited Paper  
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**Charge-Exchange Experiments with Highly Charged Ions and Their Relevance to Astrophysics<sup>1</sup>**

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The wide range of highly-charged ions (HCIs) and charge states produced in the electron cyclotron resonance ion source allows one to study fundamental atomic-physics processes both for their intrinsic value, and for their importance to understanding astrophysical phenomena. These phenomena include ionization fractions of solar/stellar plasmas; charge exchange with comets, circumstellar clouds, and planetary & satellite exospheres. Presented will be recent experimental and theoretical results for absolute single and multiple charge-exchange cross sections for HCI-neutral collisions, together with spectra of X-ray emissions following the charge-exchange collision. In collaboration with Stojan Madzunkov, John MacAskill, Ara Chutjian, Jet Propulsion Lab.

<sup>1</sup>The work was carried out at JPL/Caltech under agreement with NASA.