

Abstract Submitted  
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**Recent data on a new method for producing ultracold molecular ions**<sup>1</sup> WADE RELLERGERT, SCOTT SULLIVAN, KUANG CHEN, STEVEN SCHOWALTER, JULIA CLARK, ERIC HUDSON, UCLA, THE A TEAM — We present recent data from our experimental effort to produce ultracold, internal ground-state  $\text{BaCl}^+$  ions using a Ca MOT. The method utilizes sympathetic cooling due to the strong collisions between co-trapped molecular ions and laser-cooled neutral atoms. In contrast to other experiments producing cold molecular ions, our method should efficiently cool both the internal and external molecular ion degrees of freedom. Samples of such ultracold molecular ions find applications in ultracold chemistry, precision measurement and quantum computation.

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