



Modelling of small molecules in Mercury's exosphere

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In the exosphere of Mercury only few elements have been identified experimentally. One of them is Ca, which was observed from Earth by a ground-based telescope (Bida et al., *Nature*, 404, 2000, 159). The high temperature of exospheric calcium and its preferred location around the poles led to the conclusion that sputtering is the most likely process for the Ca release into the exosphere. Recently, Killen et al. (*Icarus*, 2005, in press) proposed that the exospheric Ca is from photo-dissociated CaO molecules in the exosphere, with the CaO molecules originating from the surface via sputtering or impact vaporization. We present density calculations for CaO and its fragments in Mercury's exosphere using a Monte Carlo simulation, which is an extension of the code for atomic species (Wurz and Lamer, *Icarus*, 164, 2003, 1).