



Experimental characterization of LiF autoionization

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Low affinity materials (as MgO, CaO, LiF) are known to vary their Mie scattering profile with a changing charge. Those materials are also predisposed to autoionize themselves. Although the oxides, opposite to lithium fluoride, are expected within the space environment, the experimental investigations were carried out on LiF, since the aforementioned process shall be more pronounced. We're trapping the grains in an electrodynamic quadrupole where the dust charge and its evolution can be estimated. By precise observations, we can register isolated hops in charge which may indicate the autoionization. A rate of this process varies with previous treatment of the object. While fresh grains exhibit one or few hops within first 24 hours, the period between hops decreases to seconds and the grain increases its charge by tens of elementary charges when the grains are treated by the electron beam with energy of 0.5–1 keV. On the other hand, ion treatment seems to suspend the autoionization. The paper summarizes our observations and attempts to characterize the process itself.