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Photoinitiated processes in and on liquid helium ELENA POLYAKOVA, DANIIL STOLYAROV, CURT WITTIG, Columbia University — Photoinitiated processes that involve molecules in He_n droplets are examined. Excitation to states that contain Rydberg character results in repulsion between the electronically excited embedded molecules and the surrounding helium. Even after the helium has moved further from the molecular core, the situation is unstable in the sense that the electronically excited species prefer the surface. The timescale for transport to the surface is < 10 ns duration of the laser pulse. The resulting surface-bound species can be ionized, yielding small clusters of the form He_mNO^+ , where $\langle g \rangle$ is of order 10,000. The possibility of observing high Rydberg states in which the electron is outside the helium droplet will be discussed. A vastly different case of photoexcitation occurs when the excited potential is coupled to a lower one via conical intersection.

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