

Abstract Submitted
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Resonant Auger-ICD cascade: A way to control slow-electron production in a medium¹ ALEXANDER KULEFF, KIRILL GOKHBERG, Theoretical Chemistry, PCI, Heidelberg University, Germany, PREMYSL KOLORENC, Institute of Theoretical Physics, Charles University in Prague, Czech Republic, LORENZ CEDERBAUM, Theoretical Chemistry, PCI, Heidelberg University, Germany — The recently proposed cascade [1] initiated by core excitation and terminated by intermolecular Coulombic decay (ICD) will be presented and its properties discussed. If core-excited species are embedded in an environment they decay very efficiently by the following cascade mechanism: a resonant Auger decay takes place in the initially excited species leaving the resulting ion in excited states of sufficient energy allowing the ion to continue to decay via ICD ionizing the environment. It will be shown that in complex media this cascade allows for a control over both the site of the initial excitation and the energy of the ICD-electrons emitted in the final step. Our calculations show that the energy of the emitted electrons depends sensitively on the parent excited state. The incident energy can thus be adjusted both to produce the initial excitation in a chosen atom and to realize an excitation that will result in the emission of ICD electrons with desired energies. These properties of the decay cascade might have consequences for fundamental and applied radiation biology and could be of interest in the development of new spectroscopic techniques. [1] K. Gokhberb, P. Kolorenc, A. I. Kuleff, and L. S. Cederbaum, *Nature* 505, 661 (2014).

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