

Auger Electron Linewidths of Cascade Decays in Kr

S.-M. Huttula, S. Heinäsmäki, H. Aksela and E. Kukk

Department of Physical Sciences, P.O.Box 3000, University of Oulu, FIN-90014 FINLAND

Resonant Auger spectra are well known to exhibit the linewidth-narrowing effect. Tuning the photon band width the resulting resonant Auger spectra can in principle be made to exhibit widths from zero (convoluted with the detector efficiency) up to the natural lifetime width. When the remaining ion permits a further Auger decay the second-step widths are in most cases determined by the natural width of the first-step final state. This happens when the resonant Auger electron has sufficiently large energy so that the second-step decay is decoupled from the resonant Auger emission [1].

The better case for illustrating the linewidths of the lines in second-step spectrum is the cascade process following the $3d^{-1}5p$ excitation in Kr. The spectra were measured with photon band widths of 6 meV, 45 meV and 90 meV at the I411 undulator beamline at MAX-laboratory in Lund, Sweden.

In the second-step spectrum the linewidths were observed to be constant.

[1] S.-M. Huttula, S. Heinäsmäki, H. Aksela, M. Jurvansuu and S. Aksela, submitted to J. Phys. B: At. Mol. Opt. Phys.