

# The all-seeing eye of resonant Auger electron spectroscopy: a study on aqueous KCl

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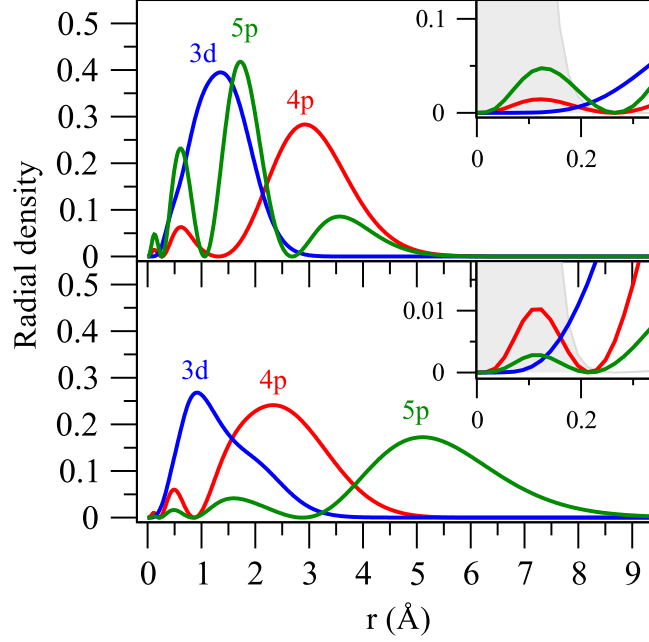


Figure 1: Radial density distributions of the singly-occupied natural orbital occupied by the excited electron corresponding to the  $1s \rightarrow 4p$ ,  $1s \rightarrow 3d$  and  $1s \rightarrow 5p$  core excitations in  $K^+$  (lower panel) and  $Cl^-$  (upper panel). The insets show the region of distances relevant for the overlap with the  $1s$  core orbital whose radial density is shown as a grey shaded area.

## References

- (1) Föhlisch, A.; Feulner, P.; Hennies, F.; Fink, A.; Menzel, D.; Sanchez-Portal, D.; Echenique, P. M.; Wurth, W. *Nature* *436*, 373.

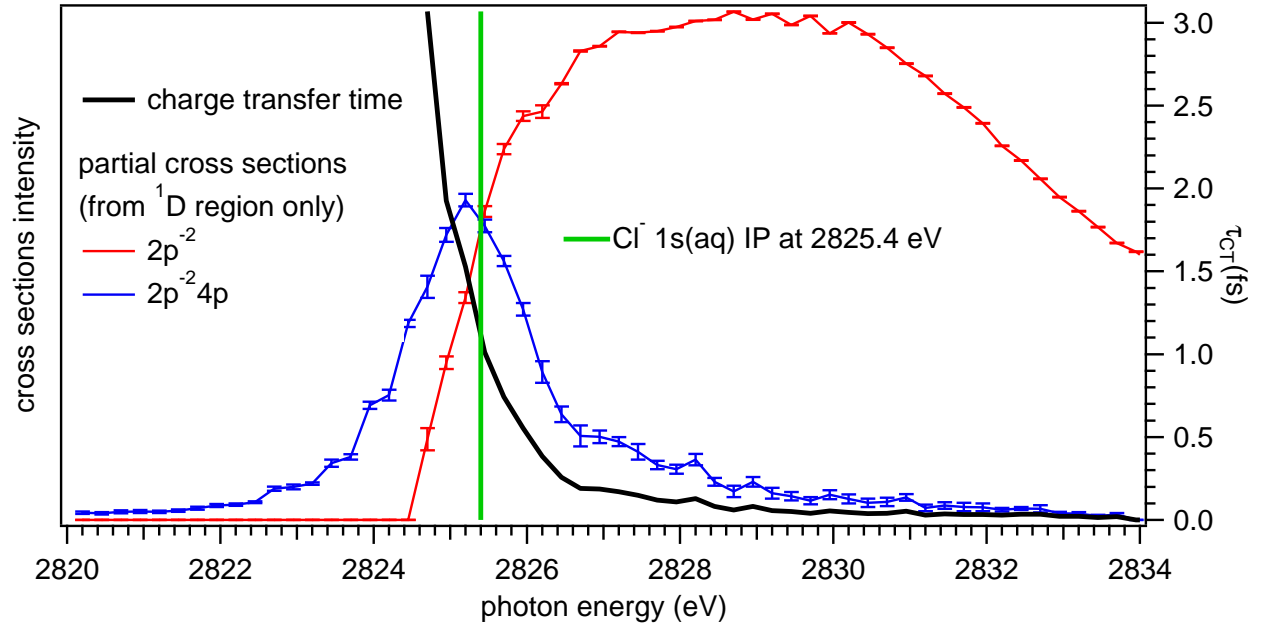


Figure 2: Partial cross sections and charge transfer time extracted from Fig. ???. The blue and red curves are obtained by integrating the area of the  $2p^{-2}$  and  $2p^{-2}4p$  final states ( $^1D$  state region only) at each photon energy step. From these curves we determine the charge transfer time  $\tau_{CT}$  according to the formula  $\tau_{CT} = \tau l/d$ , with  $\tau$  being the Cl 1s core-hole lifetime and  $l/d$  being the intensity ratio of the localized ( $2p^{-2}4p$ ) and delocalized ( $2p^{-2}$ ) states at a given excitation energy.<sup>1</sup> The green line defines the  $Cl_{aq}^{-}(1s)$  ionization potential.