

What makes Ce particularly interesting is that the $4f$ -orbitals tail out far enough to make it conceivable that a $4f$ -band is formed. In the metal, the $4f$ and $5d$ states hybridize leading to a non-magnetic ground state. X-ray absorption MCD has shown that a small $4f$ magnetic moment is present, however, when Ce is alloyed to a $3d$ ferromagnetic element [3]. Our resonant x-ray emission spectroscopy (RXES) results are presented in the figure. It is becoming evident that (RXES) provides new insight into charge transfer excitations (see Ref. 4 for example). Here the interesting hybridization effects unquestionably deserve further attention. An accompanying proposal develops further the information which can be extracted from such experiments.

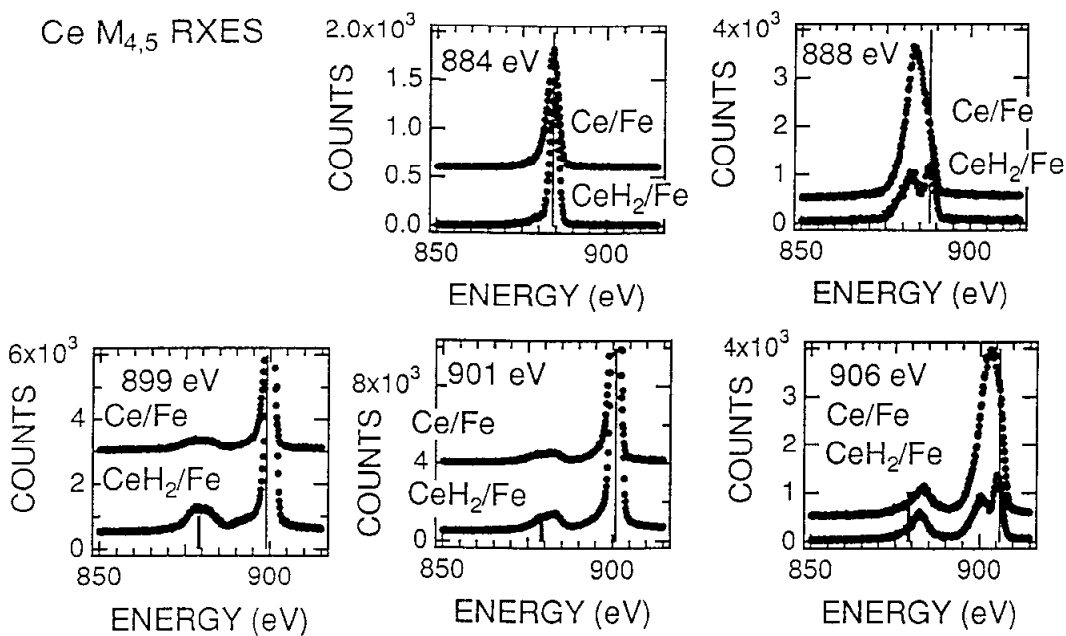


Figure 1. $3d_{5/2} \rightarrow 4f$ excitation to main peak (884 eV) and above (888 eV) [top row]:
 $3d_{3/2} \rightarrow 4f$ excitation to below main peak (899 eV), to main peak (901 eV)
and above (904 eV) [bottom row].

- [1] J. Nordgren et al., Rev. Sci. Instrum. 60, 1690 (1989)
- [2] Ce-Fe multilayers were provided by W. Felsch, Göttingen University
- [3] M. Finazzi et al., Phys. Rev. Lett. 75, 4654 (1995)
- [4] S. M. Butorin et al., Phys. Rev. Lett. 77, 574 (1996)