Glass Analysis

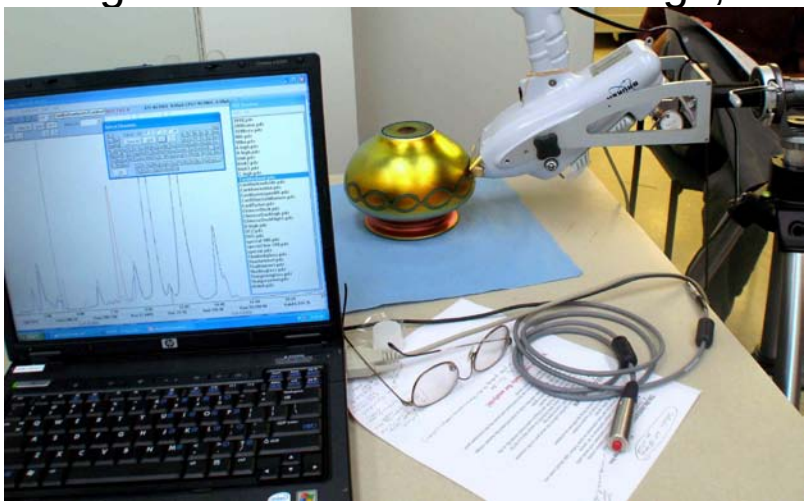
BRUKER

By
Bruce Kaiser

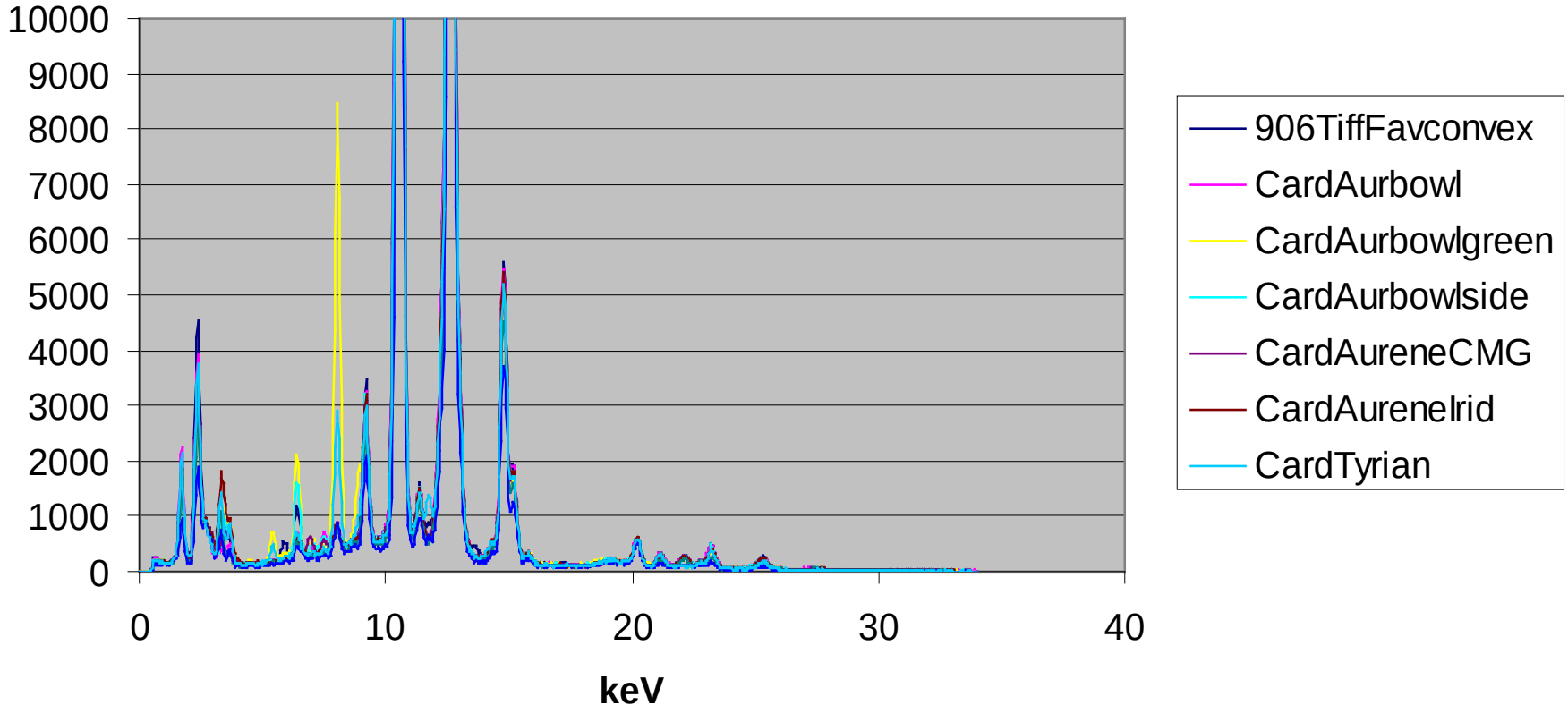
Glass Analysis at Corning Glass Museum

The spectra shown below were taken of several glass bowls and fragments in key locations on each. The analyses were done at the Corning Glass Museum with a Bruker handheld xrf system with the tube voltage and current set at 40kV and 0.8 micro amps. No beam filter was used and the system was using the vacuum attachment to assure maximum sensitivity to the low z elements. Details are shown on the pages which follow.

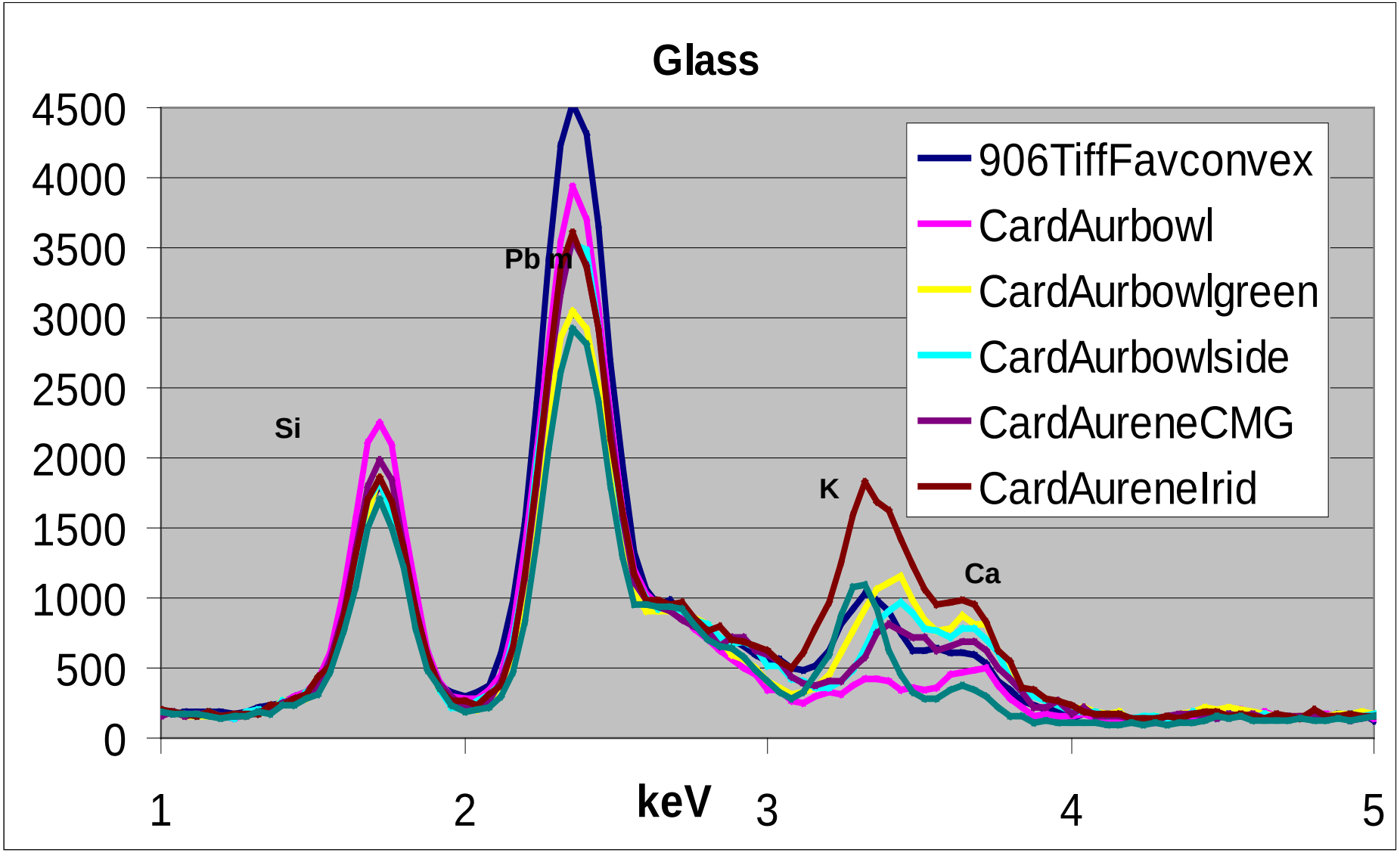
These provide some insight into what the instrument is capable of relative to glass analysis. For elements from Fe to U the elemental sensitivity can reach down to 1 ppm depending on the instruments settings, x ray beam filtering and the glass matrix.



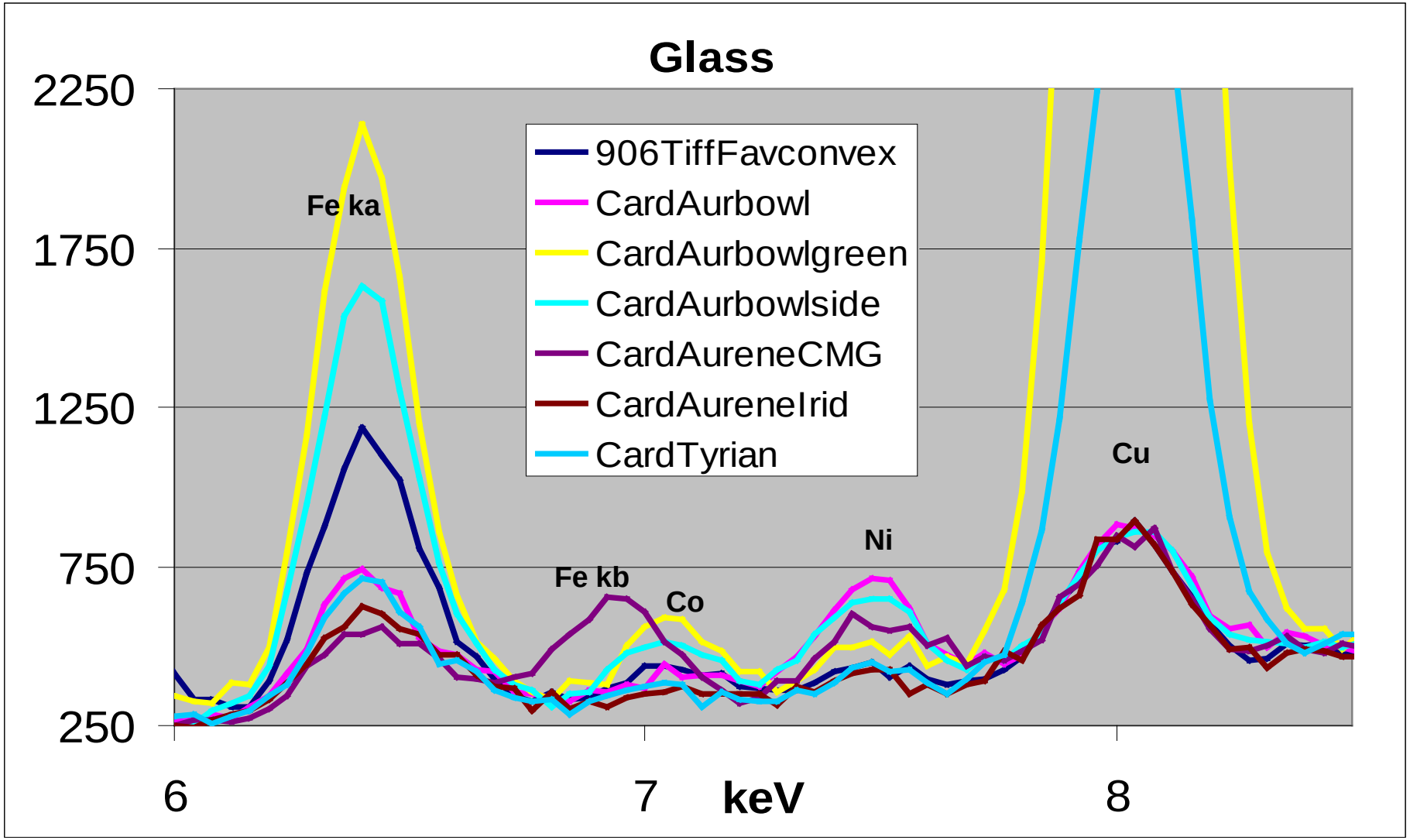
Overlay of full Spectra of Glass Arifacts



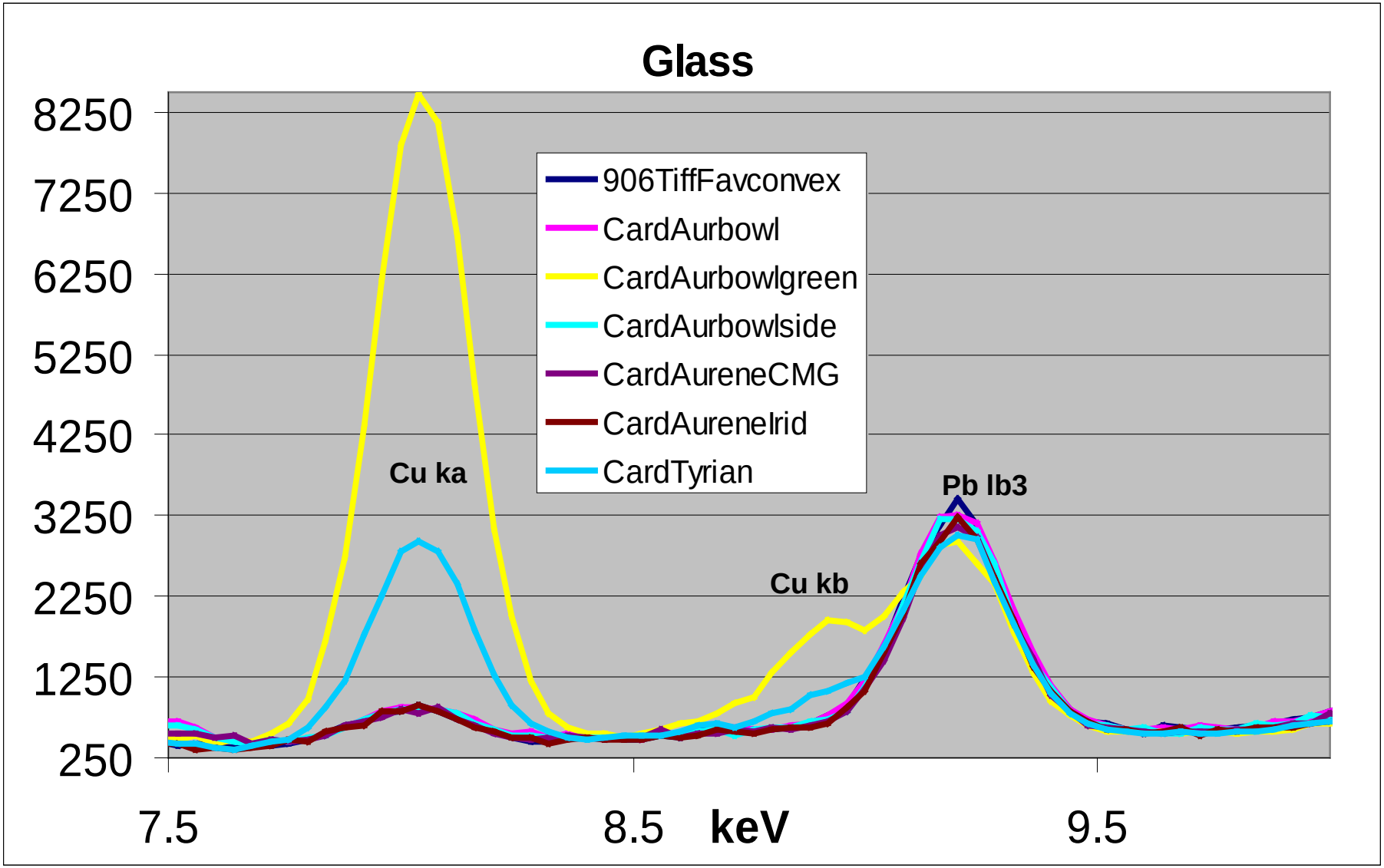
These spectrum were taken of several glass bowls and fragments in key locations on each. The analyses were done with a Bruker handheld xrf system with the tube voltage and current set at 40kV and 0.8 micro amps. Details are shown on the pages which follow.



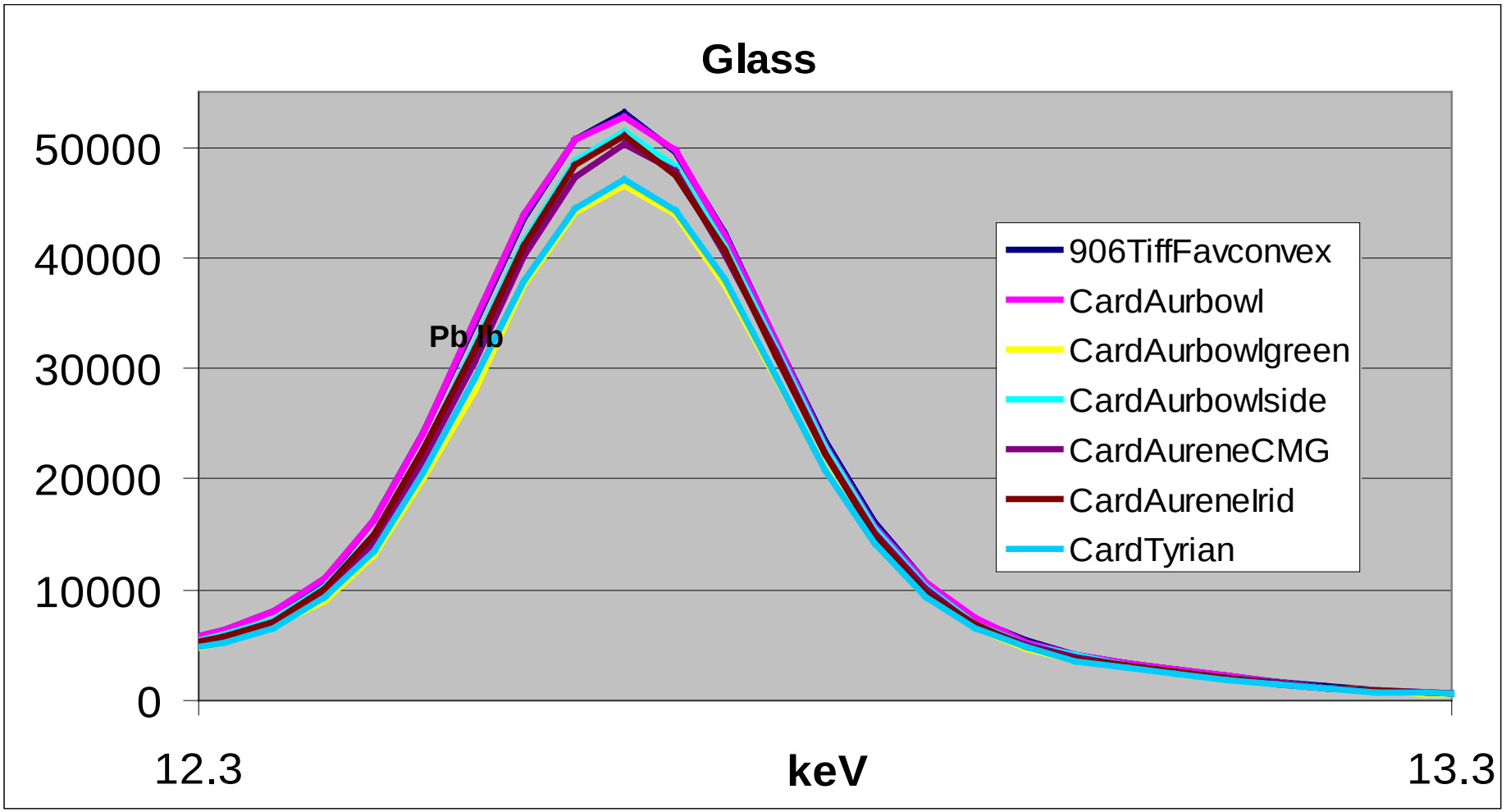
Variations in the Si, Pb, K and Ca content of the various glass objects can be seen. The relative content of each artifact can be seen through the colour coding. Pb content varies by about 30%, (from 22 to34%), Si varies by about 20%(from 50 to 75%) and K varies by 95 %(from 1 to 15%). Please note these are ball park estimates base on the operators experience.



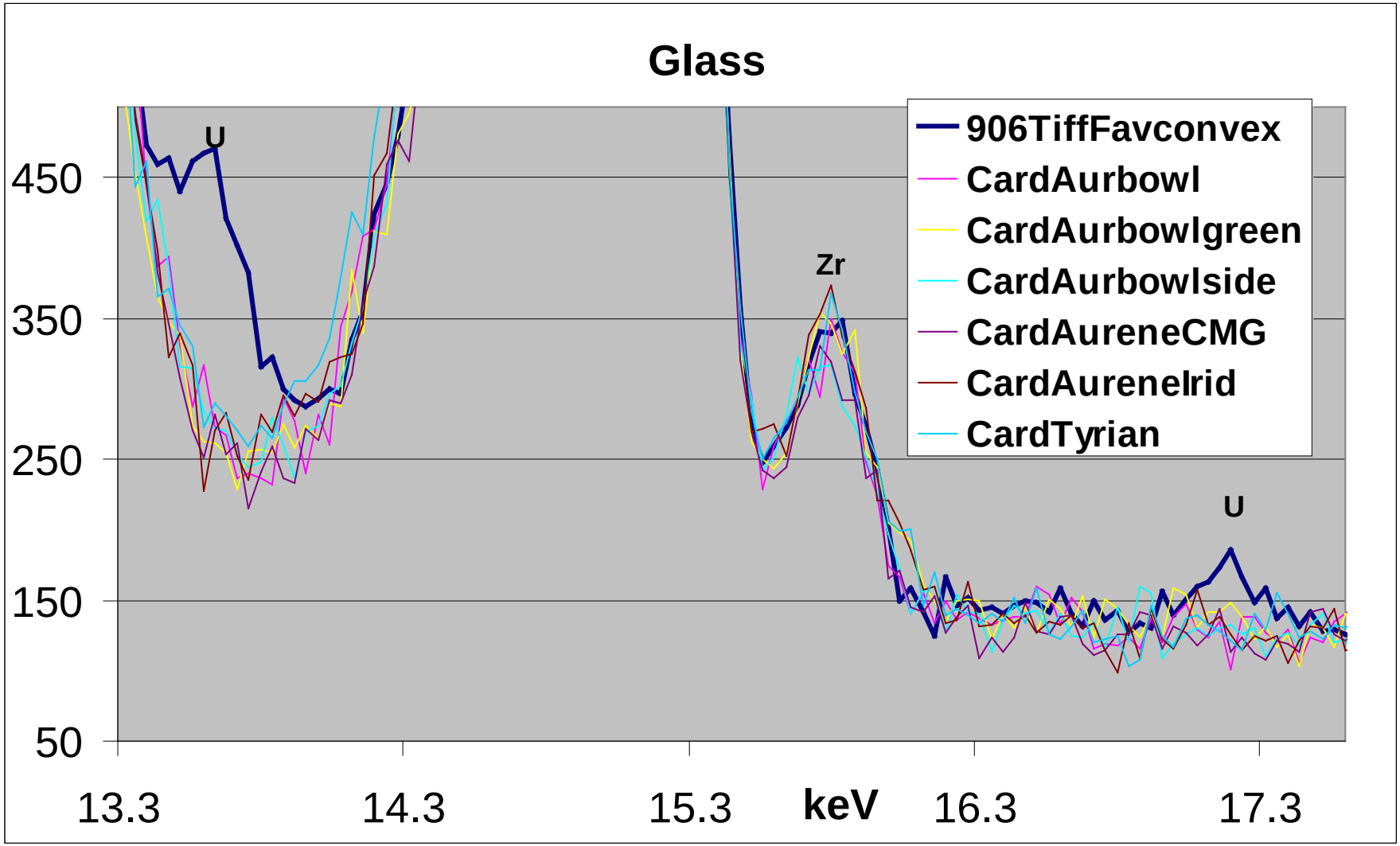
Variations in the Fe, Co, Ni and Cu content of the various glass objects can be seen. The relative content of each can be determined through the colour coding.



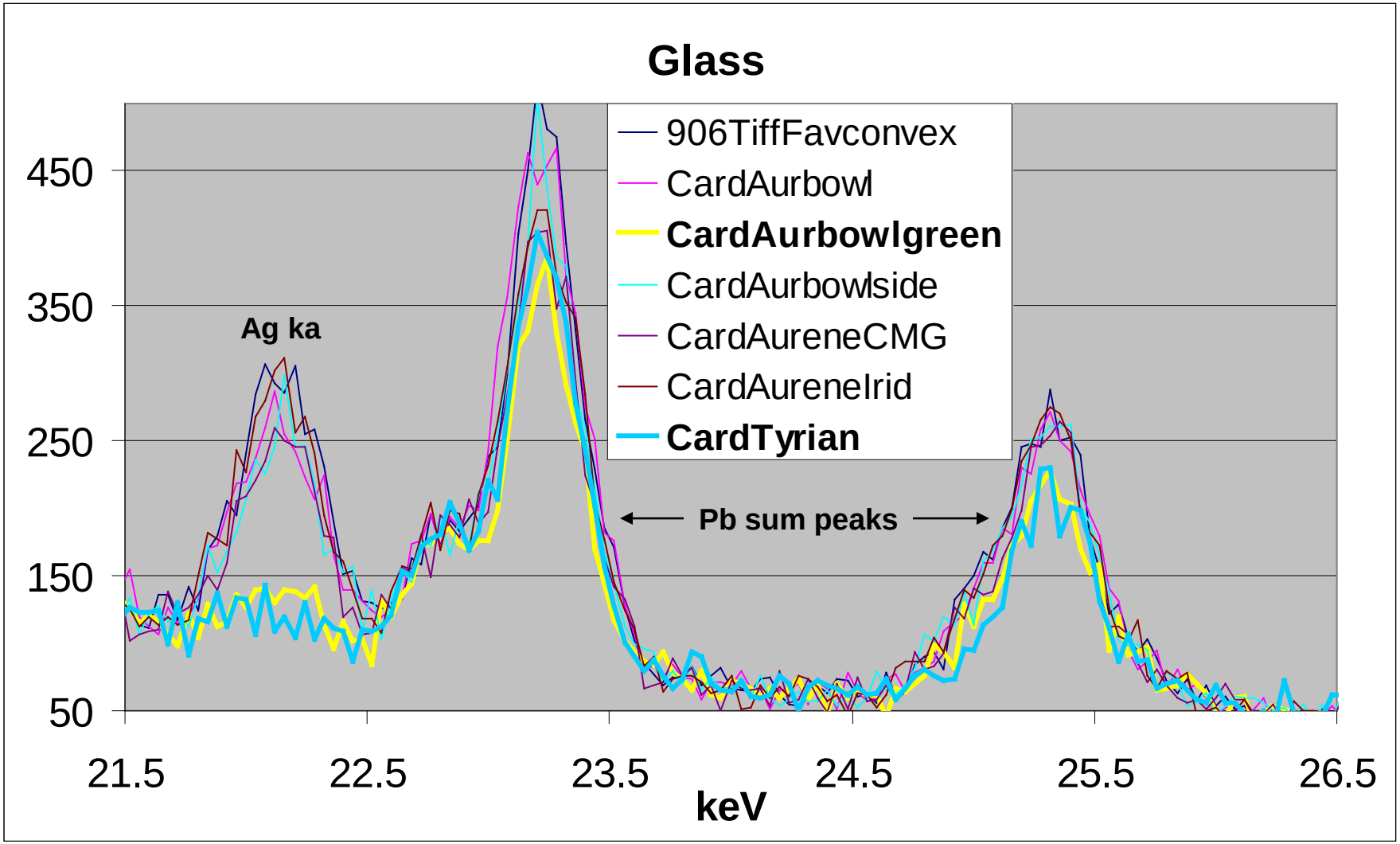
The Cu content of the various glass objects can be seen. The Pb content of each glass is very similar. Only CardAurbowlgreen and CardTyrian contain Cu.



The Pb content of each glass Pb content varies by about 30%, (from 22 to34%), CardAurbowlgreen and CardTyrian contain less Pb than the other glasses.



Only 906TiffFavconvex contains U. All Glasses contain about the same amount of Zr. Note the Zr and U are about 20 ppm and 30 ppm respectively.



CardAurbowlgreen and CardTyrian contain no Ag. The remainder of the samples contain a very similar amount of Ag.