The new Orion laser system in the UK combines long pulse (nanosecond timescale) laser driven shock compression and short pulse (picosecond timescale) laser heating to create dense plasma samples for spectroscopic studies. The samples are buried microdots of diameter 50µm and 0.1-0.6µm thick in either plastic foil or diamond sheet. K-shell emission from both pure and mixed samples have been studied and measurements of dense plasma effects such as line broadening, ionization potential depression, and line shifts have been made over a range of conditions from electron temperatures of 500eV up to 2keV and material densities from 1g/cc - 10g/cc. In experiments on aluminium the K-shell spectra show the effect of ionization potential depression as a function of density via the delocalization of n=3 levels and disappearance of n=3 transitions in He-like and H-like aluminium. The data are compared to simulated spectra that account for the change in ionization potential depression by the commonly used Stewart and Pyatt analytical prescription; an ion sphere, self-consistent field model and an alternative analytical model due to Ecker and Kröll suggested by recent X-ray free-electron laser experiments. The experimental data are in reasonable agreement with the model of Stewart and Pyatt, but are in better agreement with an ion sphere model. The data indicate that the Ecker and Kröll model overestimates substantially the ionization potential depression in this regime.