Metal abundances in the hottest known DO white dwarf (KPD0005+5106)

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We present the analysis of ultraviolet and optical spectra of KPD 0005+5106. A re-determination of the atmospheric parameters is necessary because the recent discovery of highly ionised metals (Ne VIII, Ca X) indicates that the effective temperature is significantly higher than previously thought. Here we announce the discovery of lines from highly ionised silicon, sulfur, and iron which were never found before in any stellar photosphere. Our analysis of these lines and those from helium and several other metals gives $T_{\rm eff} = 200\,000 \pm 20\,000$ K, $\log g = 6.7 \pm 0.3$. Mass and luminosity follow from a comparison with evolutionary tracks: $M = 0.64\,{\rm M}_\odot$ and $\log L/{\rm L}_\odot = 3.7$, hence strictly speaking, the star is a helium-burning *pre*-white dwarf. The mass fractions of the metals in the He-dominated atmosphere are in the range $0.7 - 4.3$ solar. Hydrogen is not detectable and we derive an upper abundance limit of 0.034 solar. This abundance pattern is probably unaffected by gravitational settling and radiative levitation. Its origin lies in previous evolutionary stages. We discuss the link of KPD 0005+5106 to RCrB stars and its possible outcome of a double-degenerate merger event.