The Chemical Composition of the Halo Mira V CrB

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We have derived CNO and metal abundances for the metal-deficient carbon Mira V CrB using the high-resolution spectra obtained by C. Barnbaum with the Hamilton Echelle Spectrograph of the 3-m telescope at Lick Observatory and an FTS near-IR spectrum from KPNO archives. These spectra were analysed by the synthetic spectrum method. New model atmospheres were calculated for this highly metal-poor carbon Mira. The atmospheric model used was calculated with continuum opacity sources and molecular opacity due to CO, CN, C_2, HCN, C_2H_2 and C_3. The important simplification is that this is a static atmosphere.

V CrB was found to be metal-deficient with [Fe/H] $= -2.12$. The CNO abundances are $\log A(\mathrm{C}) = 7.17$, $\log A(\mathrm{N}) = 5.3$, and $\log A(\mathrm{O}) = 7.13$. The carbon isotopic abundance ratio is $^{12}\mathrm{C}/^{13}\mathrm{C} = 10.5 \pm 5.0$. The abundances of *s*-process elements are enhanced. For details see Kipper (1998, *Baltic Astronomy*, in press). The abundance pattern is similar to that of other late-type CH stars. The low C/O ratio of late-type CH stars cannot be explained by the mass transfer scenario, and we suppose that these stars have formed as intrinsic carbon stars. For more details of the proposed evolution scenario see Kipper & Jørgensen (1994, *A&A*, 290, 148).

The comparison of observed and computed near-IR spectra indicates the need of improving the C_2H_2 opacity data and using dynamical model atmospheres for such cool Miras.

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