The mystery of CH stars frequency at low metallicity
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Abstract. One of the results of the spectroscopic HK and the Hamburg/ESO surveys of metal-poor stars is the high frequency of C-enhanced stars among very metal poor stars. This is still unexplained, as well as the mechanisms responsible for the production of C in the few C-enhanced extremely metal poor (CEMP) stars studied so far with high resolution, high S/N spectroscopy. The results of the follow-up works to date suggest that there are different kinds of CEMP stars, exhibiting, besides the C-enhancement, s- and r-process element enhancements, as well as normal n-capture elements abundances; and hence possibly as many C production mechanisms. To shed light on such mechanisms, a wider sample of CEMP stars is crucial. We present the preliminary results of abundance analysis of UVES and HIRES spectra of a sample of 10 CEMP stars, suggesting that there is no definite trend of [Pb/Ba] with [Fe/H], contrary to what was supposed on the basis of the Aoki et al. (2002, ApJ, 567, 1166) sample, and also at odds with the predictions of the shell nucleosynthesis models. Moreover, the coupling of our results with those published in the literature show a clear correlation between [Pb/Ba] and [N/Fe], especially when considering the more metal poor stars ([Fe/H] < −2 dex), suggesting that the most extreme s-process signatures are present in stars with high N abundances. This is somewhat surprising, as N is a poison for the s-process and a high content of such element is expected to inhibit the s-process.

Sulphur and Zinc Abundances in Halo and Disk stars
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Abstract. High resolution spectra of 34 halo population dwarf and subgiant stars have been obtained with VLT/UVES and used to derive sulphur abundances from the λ8694.0, 8694.6 and λλ9212.9, 9237.5 S I lines. In addition, iron abundances have been determined from 19 Fe I lines and zinc abundances from the λλ4722.2, 4810.5 Zn I lines. The abundances are based on a classical 1D, LTE model atmosphere analysis, but effects of 3D hydrodynamical modeling on the [S/Fe], [Zn/Fe] and [S/Zn] ratios are shown to be small. We find that most halo stars with metallicities in the range −3.2 < [Fe/H] < −0.8 have a near-constant [S/Fe] ≃ +0.3; a least square fit to [S/Fe] vs. [Fe/H] shows a slope of only −0.04 ± 0.1. Among halo stars with −1.2 < [Fe/H] < −0.8 the majority have [S/Fe] ≃ +0.3, but two stars (previously shown to have low α/Fe ratios) have [S/Fe] ≃ 0.0. For disk stars with [Fe/H] > −1, [S/Fe] decreases with increasing [Fe/H]. Hence, sulphur behaves like other typical α-capture elements, Mg, Si and Ca. Zinc, on the other hand, traces iron over three orders of magnitude in [Fe/H], although there is some evidence for a small systematic Zn overabundance ([Zn/Fe] ≃ +0.1) among metal-poor disk stars and for halo stars with [Fe/H] < −2.0. (See Nissen et al. 2003, A&A, 415, 993)