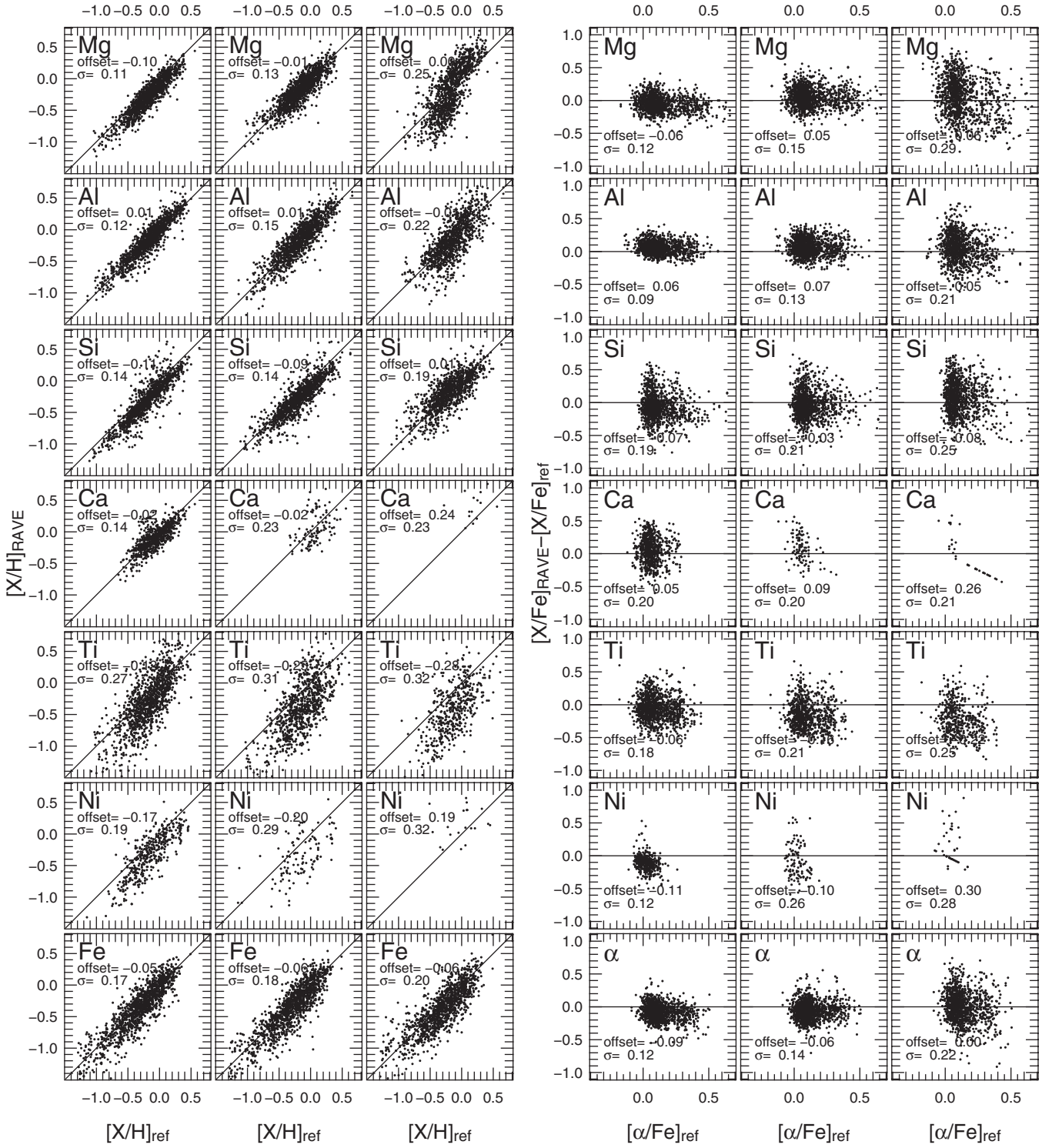

Figure 7. Same as Figure 6 but with noisy stellar parameters to simulate the RAVE stellar parameters of the RAVE archive.

respectively. When the high-resolution stellar parameters are adopted the chemical pipeline's elemental abundances agree with the SG05 and R10 results to within ∼0.15 dex on average. The smaller dispersion of the SG05 stars around the one-to-one correspondence line compared to R10 is due to the higher S/N of the RAVE spectra of these stars. All elements are typically underestimated by ∼0.1 dex, an offset that is roughly constant across the entire abundance range [−2.0, +0.5] dex. The α-enhancement (Figure 11) is estimated well for all but [α/Fe] > 0.4 dex, where there is a small systematic bias of ∼0.1 dex.

When the RAVE stellar parameters are adopted (the "second test," Figure 12) the dispersion in our elemental abundances compared to the published values increases to ∼0.2–0.3 dex on average, depending on the element. In Table 1 we report the mean and standard deviation after grouping the sample in dwarf and giant stars separately. The larger dispersion at low abundances ([X/H] < −1.0 dex) is very likely due to the fact that estimating precise stellar parameters on such spectra is challenging due to the few and weak visible absorption features (excluding for the Ca II triplet, which is not measured).

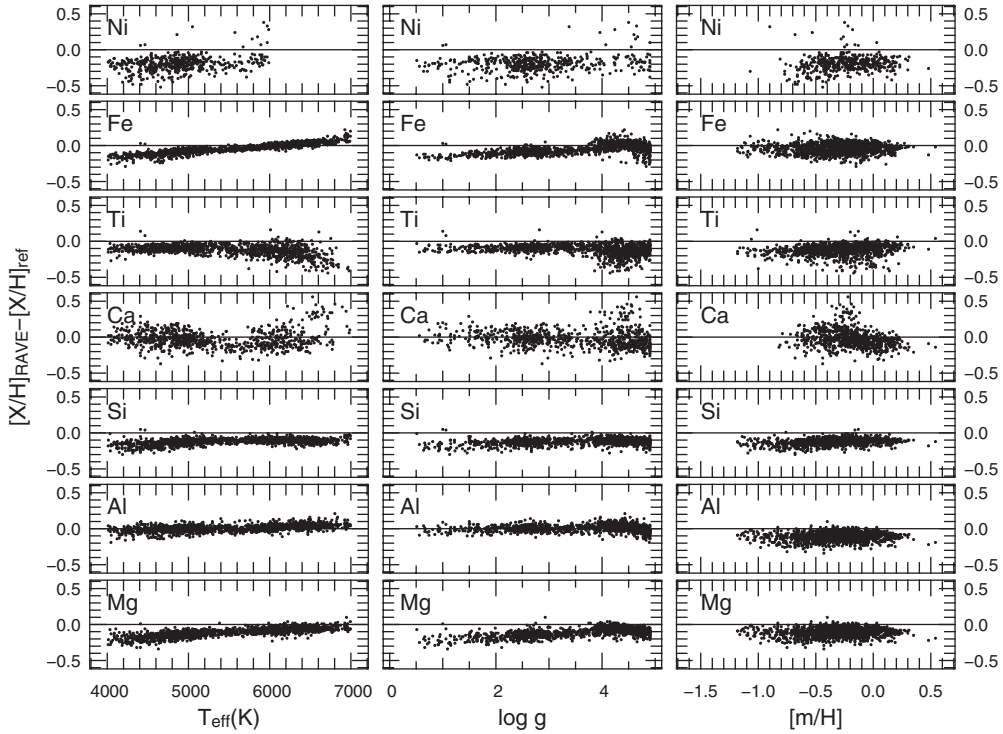

Figure 8. Correlation between the elemental abundance residuals measured minus expected (*y*-axis) and the stellar parameters (*x*-axis) at S/N = 100.

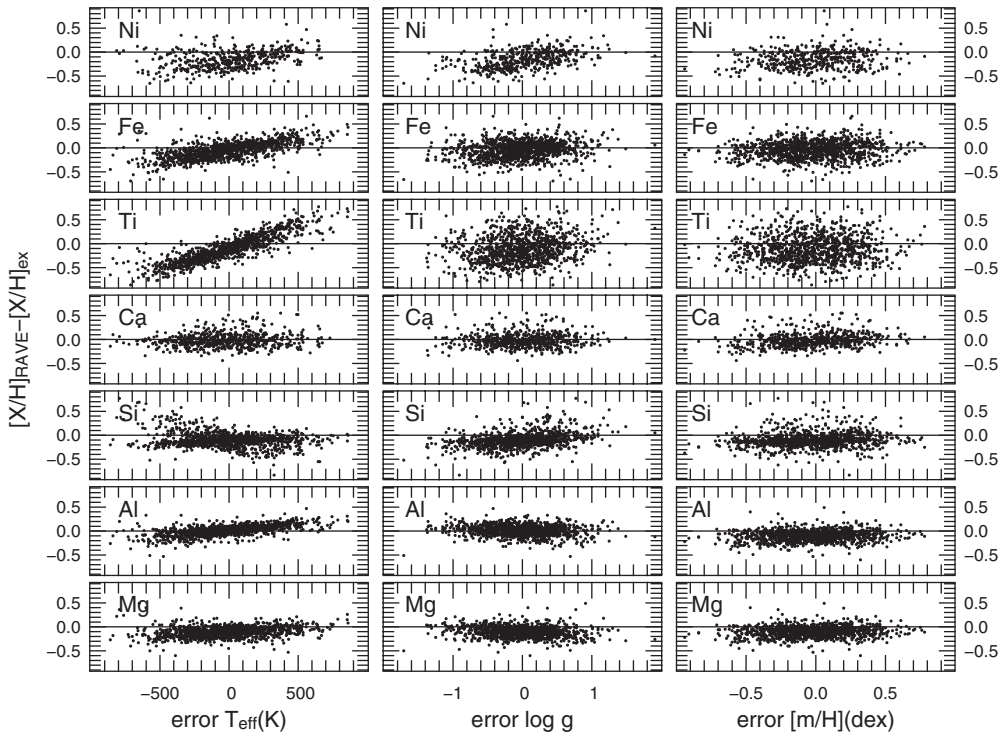

Figure 9. Correlation between the elemental abundance residuals measured minus expected (*y*-axis) and the stellar parameter errors (*x*-axis) at S/N = 100.

The enhancement estimates ([X/Fe], see Figure 13) are accurate to within ∼0.3 dex. At high enhancements, abundances are systematically underestimated by ∼0.1–0.2 dex, depending on the element. However, as we are comparing our measurements with other authors' (high resolution) measurements, the variance of the residuals is the quadratic sum of the variances of our and the high-resolution results. This means that the standard deviations reported in Figures 12 and 13 represent a conservative estimate of the expected RAVE errors.

3.3. Internal Errors from Repeat Observations

In order to take into account the effect of binary stars, RAVE observes some stars (∼5% of the whole sample) more than once. In this chemical catalog, 964 stars have been observed

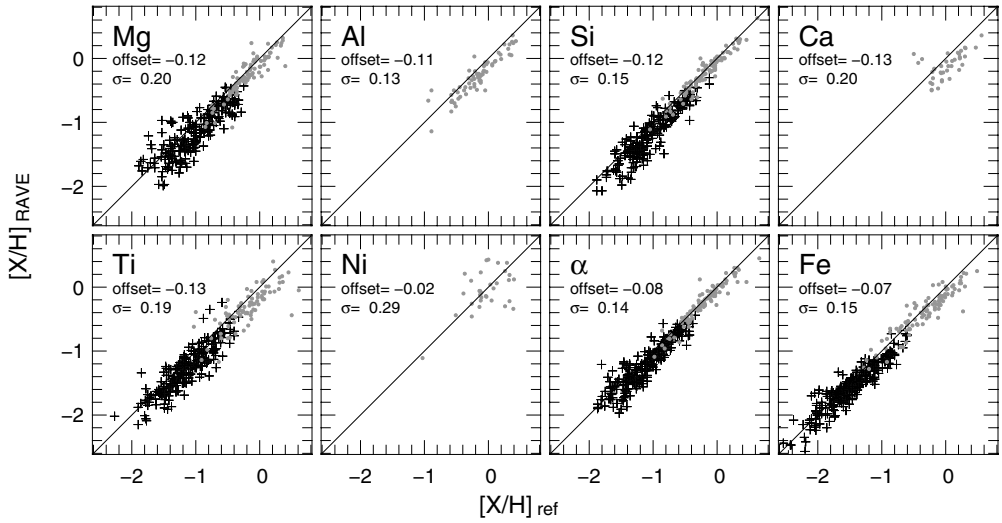

Figure 10. Comparison between high-resolution elemental abundance ($[X/H]_{ref}$) from the literature (x-axis) and RAVE elemental abundances (y-axis) for the SG05 sample (98 stars, gray dots) and the R10 sample (243 stars, black "+'s"). For these measurements we adopted the values of T_{eff} and $\log g$ from the high-resolution data (first test).

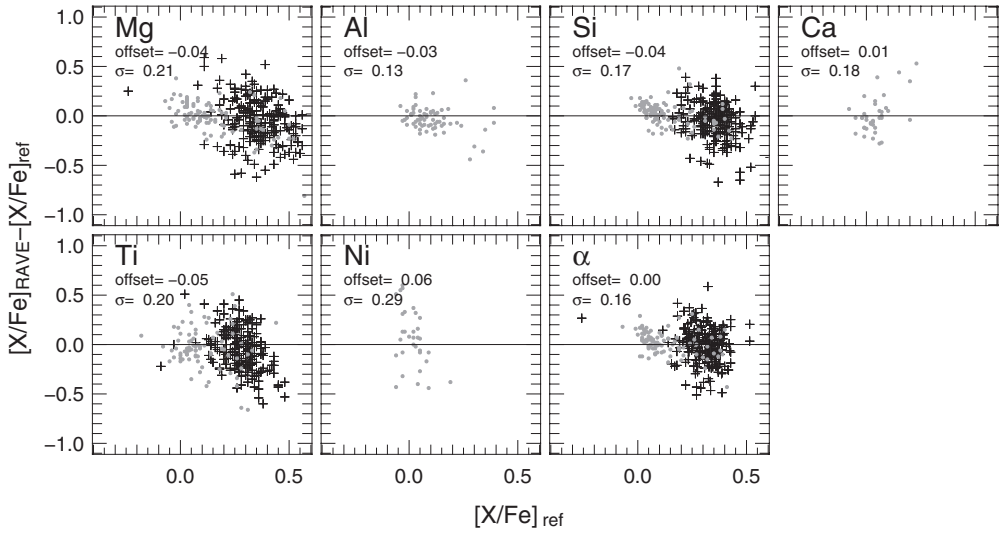

Figure 11. Relative elemental abundance residuals RAVE-minus-high-resolution (y-axis) vs. high-resolution measurements ($[X/Fe]_{ref}$). For these measurements we adopted the values of T_{eff} and $\log g$ from the high-resolution data (first test). The symbols are as in Figure 10.

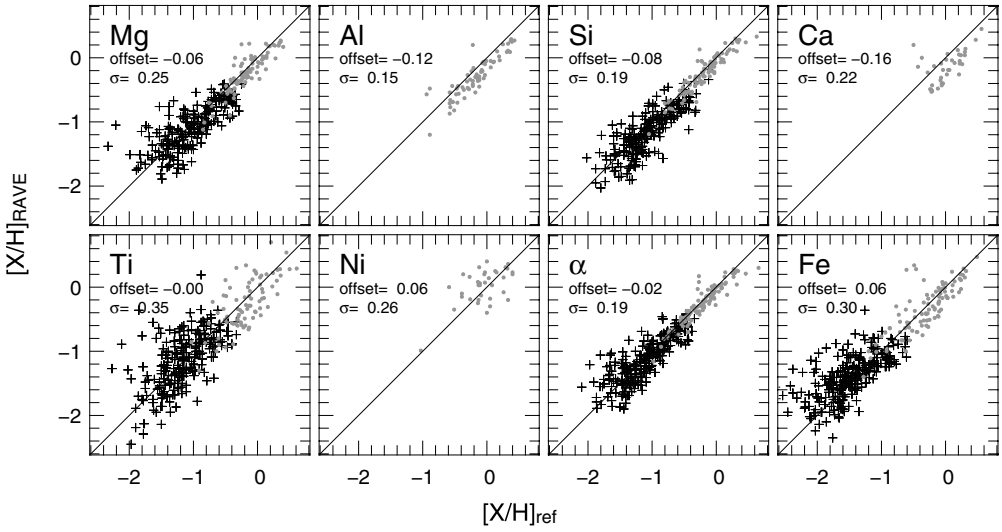

Figure 12. Same as Figure 10 but adopting T_{eff} and $\log g$ from the RAVE data (second test).