



Fig. 2 (a) and (b) show in-phase and in-quadrature interferograms at $f_m = 184\text{ MHz}$ using Lock-in detection, respectively. (c). Unapodized in-phase spectrum of C_2H_2 . (d). Expanded representation of (c) showing perfect instrumental lineshape. (e). Unapodized in-quadrature spectrum. (f). Expanded representation of (e). (g) and (h). Comparison between observed and calculated in-phase and in-quadrature spectra (amplitude and phase spectra), respectively.