



Fig.3 L-glutamine. (a) Molecular structure with atom labelling matching IUPAC recommendations.²¹ (b,c) CP-HETCOR spectra with : (b) all (S_0) or (c) ^{14}N -edited (S_0 - S_1) ^1H - ^{13}C cross-peaks. $PM\text{LG}_{\text{S}}^{\pm}$ decoupling scheme was applied during t_1 with $\nu_{1-1\text{H}} = 99$ kHz and $\tau_D = 1.4$ μs . ^1H axis has been rescaled. Spectra are the result of averaging 320 transients for each of 70 t_1 increments with $\Delta t_1 = 70$ μs , with a recycle time of 2s. The total experimental time for the two spectra has been of 25 hrs (320*70*2*2 sec). The SFAM₁ scheme was used for ^{13}C - ^{14}N recoupling with $\tau_{\text{rec}} = 814$ μs , $\nu_{\text{rec}}^{\text{peak}} = 41$ kHz and $\Delta\nu_{0-13\text{C}} = 20$ kHz. ^1H - ^{13}C CP-MAS: contact time = 2.5 ms, $\nu_{1-13\text{C}} = 54$ kHz, the power of ^1H is optimized with tangent-ramped shape. $B_0 = 9.4$ T, $\nu_R = 13.51$ kHz, $\nu_{1-14\text{N}} = 50$ kHz. ^1H decoupling : $\nu_{1-1\text{H}} = 86$ kHz. ^{13}C π and $\pi/2$ pulses: $\nu_{1-13\text{C}} = 50$ kHz.