Supporting Information for

"Significant ^{13}C NMR Signal Enhancements in Amino Acids via Adiabatic Demagnetization and Remagnetization Cross Polarization"

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Table S1: *Experimental Parameters for NMR Experiments on Stationary Glycine Sample*

Parameter	***Hartmann-Hahn CP***	***ADRF/ARRF CP***
External field, B_0 (T)	7.05	
Spectrometer	Bruker Avance Neo	
Probe and sample holder	Bruker 3.2 mm HX MAS probe	
Pre-scan delay (s)	5	
Number of transients	128	
^{1}H $\pi/2$ rf power (kHz)	62.5	
^{1}H decoupling during acquisition	62.5 kHz	
^{1}H transfer pulse:		
Shape	Linear Ramp	Downward tanH
Power (kHz)	55 to 70	50 at shape maximum
Length (ms)	6	5
^{13}C transfer pulse:		
Shape	Constant	Upward tanH
Power (kHz)	62.5	55 at shape maximum
Length (ms)	6	40

Table S2: *Experimental Parameters for NMR Experiments on Stationary[†] and Spinning[‡] Samples of Tyrosine HCl*

Parameter	***Hartmann-Hahn CP***	***ADRF/ARRF CP***
External field, B_0 (T)	7.05	
	Bruker Avance Neo	
Probe and sample holder	Bruker 3.2 mm HX MAS probe	
Pre-scan delay (s)	5	
^{1}H $\pi/2$ rf power (kHz)	62.5	
^{1}H decoupling during acquisition	62.5 kHz	
^{1}H transfer pulse:		
Shape	Linear Ramp	Downward tanH
Power (kHz)	55 to 70	40 at shape maximum
Length (ms)	6	1
^{13}C transfer pulse:		
Shape	Constant	Upward tanH
Power (kHz)	62.5	50 at shape maximum
Length (ms)	6	40

[†]Stationary-sample experiments used 128 transients for both HH CP and ADRF/ARRF CP
[‡]Spinning-sample experiments used 1 transient, a 62.5 kHz rf power for the ^{13}C $\pi/2$ flip-back and readout pulses, and 10 kHz sample rotation initiated during the 60 s z-storage period

Bruker Pulse Sequence for ADRF/ARRF CP:

```
;CP using ADRF/ARRF
;Make AD/AR shapes with Bruker's waveform generator
1 ze
2 d1 do:f2
  (p3 pl12 ph1):f2
  (p20:sp0 ph20):f2
  (p21:sp1 ph21):f1
  1u cpds2:f2       ;decoupling sequence
  go=2 ph31
  1m do:f2
  wr #0
HaltAcqu, 1m
exit
ph0= 0
ph1= 1 3
ph20= 2 0
ph21= 0 2 1 3 ; cyclops receiver phase cycling
ph31= 1 2 1 3
```