

Table S1 Sound speeds and apparent molar isentropic compressibilities for the *N*-acetyl amino acid amides in aqueous solution at 298.15 K

$m/\text{mol kg}^{-1}$	$u/\text{m s}^{-1}$	$10^{15} K_{s,\phi}/\text{m}^3 \text{ mol}^{-1} \text{ Pa}^{-1}$	$m/\text{mol kg}^{-1}$	$u/\text{m s}^{-1}$	$10^{15} K_{s,\phi}/\text{m}^3 \text{ mol}^{-1} \text{ Pa}^{-1}$
AcglyNH ₂					
0.199536	1506.746	-0.948 (0.015) ^a	0.097586	1501.662	-1.256 (0.031) ^a
0.180484	1505.809	-1.020 (0.017)	0.080125	1500.785	-1.348 (0.037)
0.158288	1504.710	-1.099 (0.019)	0.060293	1499.779	-1.423 (0.050)
0.140436	1503.814	-1.131 (0.021)	0.040964	1498.787	-1.403 (0.073)
0.118767	1502.729	-1.198 (0.025)			
AcalaNH ₂					
0.178835	1508.057	0.045 (0.017)	0.100116	1503.113	-0.262 (0.030)
0.161163	1506.949	0.000 (0.019)	0.079665	1501.812	-0.334 (0.038)
0.142252	1505.766	-0.076 (0.021)	0.060603	1500.601	-0.471 (0.049)
0.120579	1504.408	-0.185 (0.025)	0.040029	1499.277	-0.525 (0.075)
AcvalNH ₂					
0.158026	1510.545	0.395 (0.019)	0.084325	1504.170	-0.068 (0.035)
0.146068	1509.520	0.324 (0.020)	0.068201	1502.759	-0.206 (0.044)
0.134501	1508.533	0.220 (0.022)	0.055535	1501.641	-0.282 (0.054)
0.116566	1506.978	0.133 (0.026)	0.041115	1500.371	-0.486 (0.073)
0.099951	1505.546	-0.039 (0.030)			
AcleuNH ₂					
0.158402	1513.007	0.110 (0.019)	0.085493	1505.667	-0.861 (0.035)
0.145264	1511.709	-0.077 (0.020)	0.069540	1504.013	-0.997 (0.043)
0.130184	1510.203	-0.275 (0.023)	0.054190	1502.426	-1.281 (0.0550)
0.114752	1508.646	-0.462 (0.026)	0.040826	1501.021	-1.389 (0.073)
0.100622	1507.203	-0.593 (0.030)			

AcileNH₂

0.012032	1497.954	-2.83 ₇ (0.25)	0.010068	1497.749	-2.93 ₀ (0.30)
0.011497	1497.896	-2.74 ₆ (0.26)	0.008930	1497.631	-3.05 ₆ (0.34)
0.011077	1497.856	-2.96 ₉ (0.27)	0.008088	1497.542	-3.05 ₀ (0.37)
0.010540	1497.797	-2.83 ₂ (0.28)			

AcasnNH₂

0.069627	1501.318	-5.267 (0.043)	0.043568	1499.598	-5.457 (0.069)
0.064043	1500.952	-5.319 (0.047)	0.039961	1499.361	-5.518 (0.075)
0.058120	1500.558	-5.326 (0.052)	0.034027	1498.961	-5.468 (0.088)
0.052025	1500.157	-5.385 (0.058)	0.027869	1498.555	-5.58 ₇ (0.11)
0.046161	1499.762	-5.337 (0.065)			

AcglnNH₂

0.096104	1503.907	-2.110 (0.031)	0.065265	1501.616	-2.293 (0.046)
0.090150	1503.469	-2.162 (0.033)	0.056415	1500.944	-2.239 (0.053)
0.083351	1502.960	-2.168 (0.036)	0.050944	1500.537	-2.300 (0.059)
0.075334	1502.360	-2.181 (0.040)	0.041186	1499.812	-2.460 (0.073)

ActyrNH₂

0.019509	1498.298	5.80 ₀ (0.15)	0.016423	1498.048	5.65 ₃ (0.18)
0.018918	1498.249	5.81 ₂ (0.16)	0.015991	1498.004	5.96 ₅ (0.19)
0.018534	1498.225	5.56 ₆ (0.16)	0.014967	1497.921	5.92 ₂ (0.20)
0.018083	1498.179	5.85 ₅ (0.17)	0.014085	1497.855	5.64 ₅ (0.21)
0.016992	1498.097	5.58 ₂ (0.18)	0.012978	1497.762	5.71 ₂ (0.23)
0.016968	1498.096	5.54 ₈ (0.18)	0.012912	1497.760	5.55 ₂ (0.23)

^a Estimated uncertainties are in parentheses.

Table S2 Sound speeds and apparent molar isentropic compressibilities for the *N*-acetyl-*N'*-methyl amino acid amides in aqueous solution at 298.15 K

$m/\text{mol kg}^{-1}$	$u/\text{m s}^{-1}$	$10^{15} K_{s,\phi}/\text{m}^3 \text{ mol}^{-1} \text{ Pa}^{-1}$	$m/\text{mol kg}^{-1}$	$u/\text{m s}^{-1}$	$10^{15} K_{s,\phi}/\text{m}^3 \text{ mol}^{-1} \text{ Pa}^{-1}$
AcglyNHMe					
0.159001	1506.577	1.752 (0.019) ^a	0.084874	1502.016	1.530 (0.030) ^a
0.144637	1505.704	1.692 (0.020)	0.069616	1501.064	1.505 (0.043)
0.127142	1504.625	1.667 (0.023)	0.055697	1500.198	1.432 (0.054)
0.113829	1503.809	1.611 (0.026)	0.041726	1499.323	1.377 (0.072)
0.097866	1502.82	1.579 (0.031)			

AcalaNHMe

0.153826	1508.213	2.927 (0.019)	0.082519	1502.916	2.793 (0.036)
0.137043	1506.970	2.910 (0.022)	0.074020	1502.286	2.724 (0.040)
0.124211	1506.021	2.879 (0.024)	0.068223	1501.855	2.675 (0.044)
0.111937	1505.113	2.837 (0.027)	0.054403	1500.810	2.694 (0.055)
0.097040	1504.008	2.777 (0.031)	0.039910	1499.717	2.656 (0.075)

AcvalNHMe

0.144860	1509.851	2.235 (0.021)	0.084847	1504.480	1.870 (0.035)
0.128595	1508.404	2.149 (0.023)	0.068521	1502.996	1.794 (0.044)
0.115000	1507.194	2.049 (0.026)	0.055106	1501.769	1.755 (0.054)
0.100190	1505.865	1.959 (0.030)	0.041794	1500.554	1.623 (0.072)

AcleuNHMe

0.141073	1512.849	2.862 (0.021)	0.082573	1506.285	2.224 (0.036)
0.130262	1511.651	2.743 (0.023)	0.068038	1504.634	1.976 (0.044)
0.119324	1510.430	2.632 (0.025)	0.056128	1503.260	1.867 (0.053)
0.107719	1509.122	2.545 (0.028)	0.041291	1501.544	1.649 (0.072)
0.093283	1507.506	2.311 (0.032)			

^a Estimated uncertainties are in parentheses.
