Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supporting Information

for

Water in cellulose: evidence and identification of immobile and mobile adsorbed phases by ^{2}H MAS NMR

Erik L. Lindh[a,b,c,‡], *Camilla Terenzi*[a,b,‡,†,*], *Lennart Salmén*[b,c] *and István Furó*[a]

[a]Division of Applied Physical Chemistry, Department of Chemistry, KTH Royal Institute of Technology, SE-10044 Stockholm, Sweden

[b]Wallenberg Wood Science Center, KTH Royal Institute of Technology, SE-10044 Stockholm, Sweden

[c]Innventia AB, Box 5604, SE-114 86 Stockholm, Sweden

The different salts, used for creating the different humidities, are listed in Table S1.

Table S1. The different inorganic salts used to prepare the saturated salt solutions with different relative humidities, both literature data[1, 2] and own measurements.

Salt	**RH**	**RH (measured)**	**Vendor**	**Purity**
$MgCl_2$	33-34%	32-35%	Merck	≥98%
NaBr	65%	57-59%	Kebo	≥99%
NaCl	76-78%	75-76%	Merck	≥99.5%
KNO_3	94-96%	91-93%	Sigma-Aldrich	≥99%

In Table S2 the set of delays used for the two inversion-recovery ^{2}H QE NMR measurements are presented, and the delays corresponding to the selected spectra shown in Fig. 2 are also highlighted.

Table S2. The different delays of the inversion-recovery ^{2}H QE NMR spectra, spectra shown in Figure 2 are marked with *.

Delay times (s)	
Dry	Hydrated (93% RH)
0.00023*	0.00017*
0.000529	0.000289
0.001217	0.000491
0.002798*	0.000835
0.006436*	0.00142*
0.014804*	0.002414
0.034048*	0.004103*
0.078311*	0.006976
0.180115	0.011859*
0.414265*	0.02016*
0.95281	0.034272*
2.191462*	0.058262*
	0.099046
	0.168378*
	0.286242
	0.486612*
	0.82724
	1.406308
	2.390724
	4.064231*

The phase cycle used for the QE-based ^{2}H T_1 measurements was:
$\varphi(180°) = \{x, -x\}$; $\varphi(90°) = \{x, x, x, x, -x, -x, -x, -x\}$; $\varphi(90°) = \{y, -y, x, -x, -y, y, -x, x\}$;
$\varphi_{rec} = \{x, x, -x, -x, y, y, -y, -y\}$.

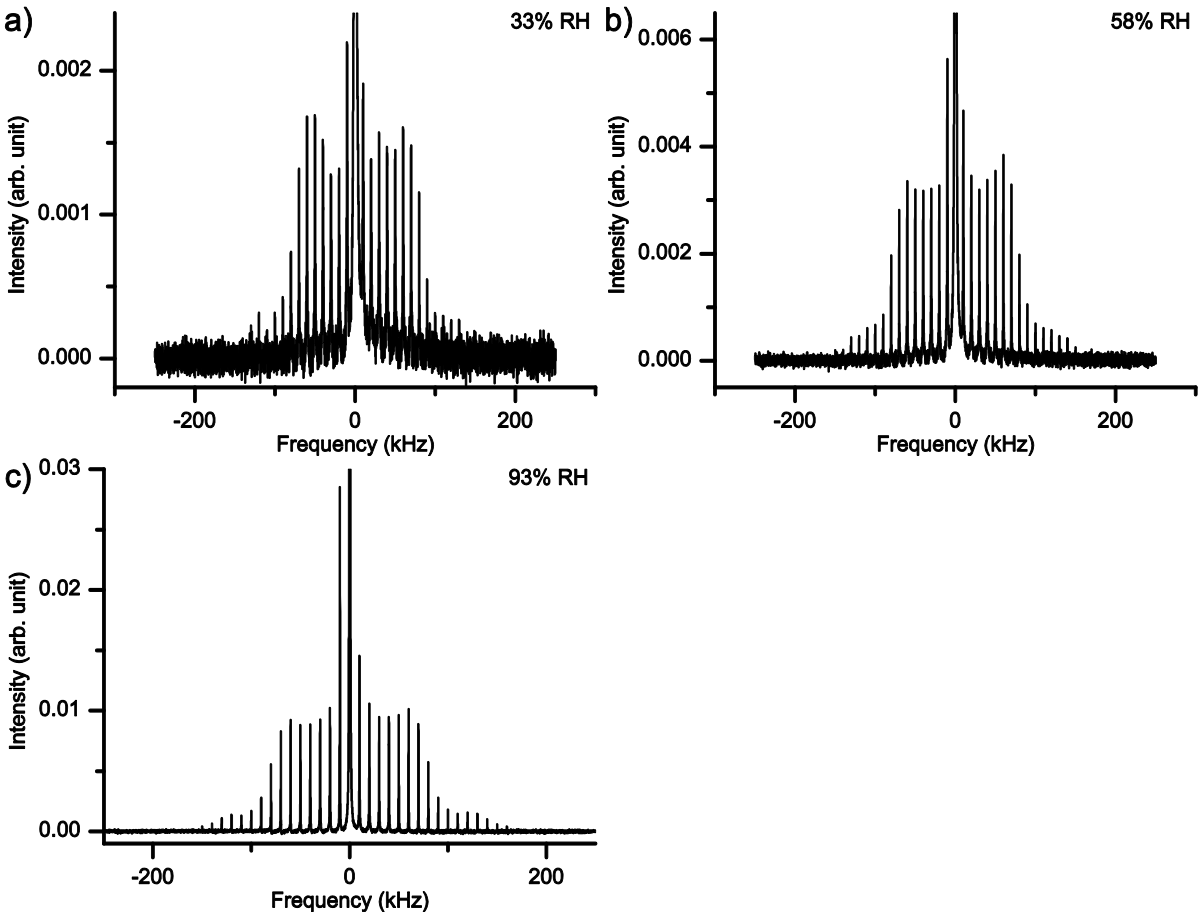

Fig. S1. The spectra presented in Fig. 4, but magnified to provide good visibility of the SSB manifolds.

References:

1. L. Greenspan, *J. Res. Natl. Bur. Stand., Sect. A*, 1977, 81, 89-96.
2. Y. Kou and S. J. Schmidt, *Food Chem.*, 1999, 66, 253-255.