Electronic Supplementary Information

Cyanosilylation of Aldehydes Catalyzed by Ag(I)- and Cu(II)-Arylhydrazone Coordination Polymers in Conventional and in Ionic Liquid Media

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1. X-ray analyses

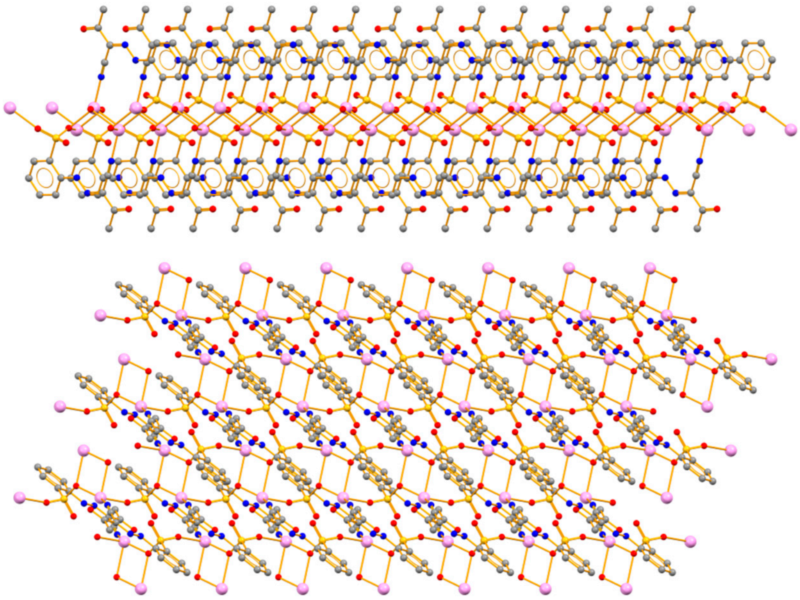

Figure S1. Fragments of the 2D network in compound **1** viewed (top) down the crystallographic *a* axis, and (bottom) perpendicular to the *ab* plane (90° flipped).

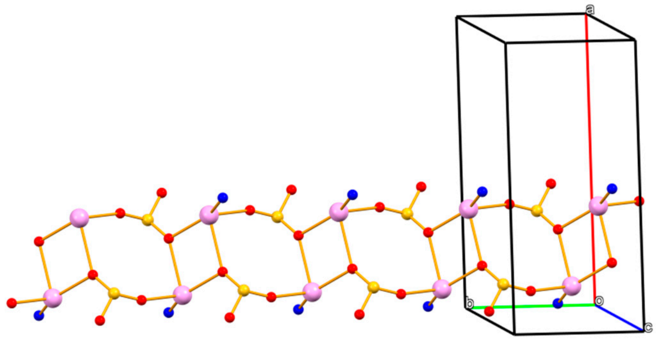

Figure S2. Fragment of a 1D infinite chain in compound **1** to highlight the side-sharing $\{AgO\}_2$ and $\{AgO_2S\}_2$ metallacycles. The non-coordinated atoms from the ligands are omitted for clarity.

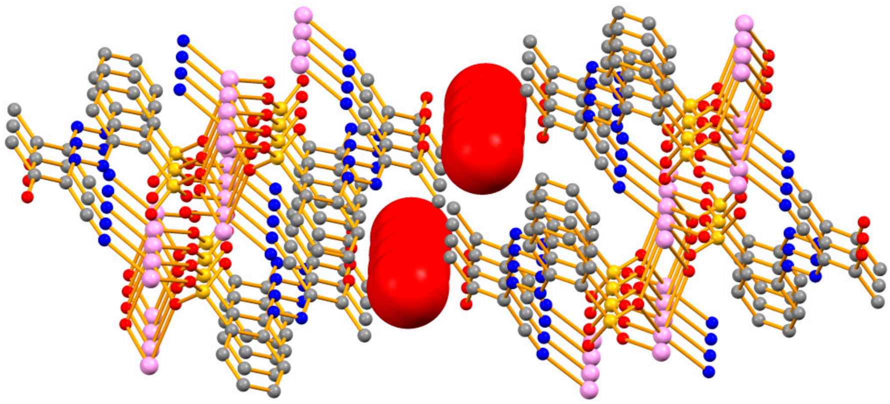

Figure S3. Fragment of two 2D sheets of polymer **1** with intercalated water molecules (represented in space filling model).

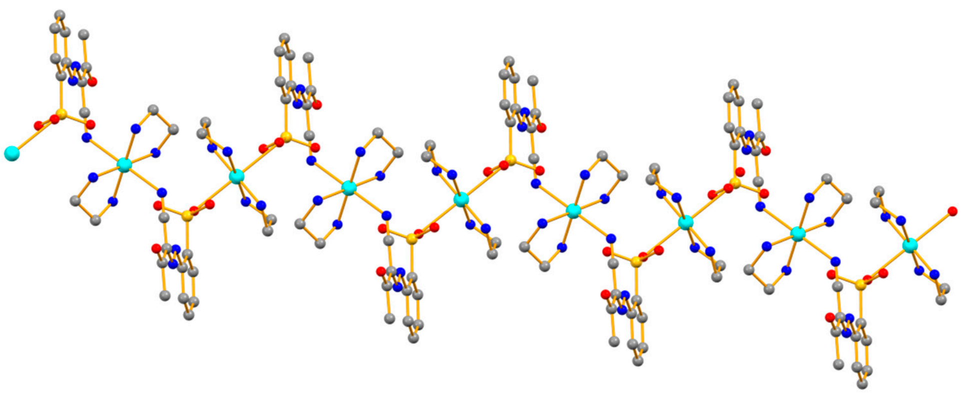

Figure S4. Fragments of the 1D chain in compound **2** viewed perpendicular to the *ab* plane.

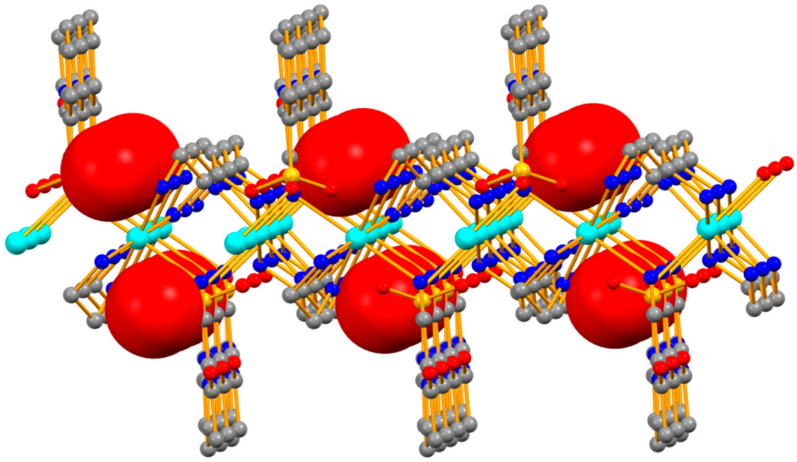

Figure S5. Fragment of chains of polymer **2** with intercalated water molecules (represented in space filling model).

Table S1. Hydrogen bonding distances (Å) and angles (°) for **1** and **2**. [a]

D–H···A	D–H	H···A	D···A	D–H···A	Symmetry operation
		1			
N1–H1N···O1	0.82(10)	1.89(10)	2.673(8)	158(11)	*intra*
N5–H5O···O4	0.94(10)	1.90(10)	2.829(9)	166(10)	*x,-1+y,z*
		2			
O1–H1W···O4	0.89(2)	1.86(2)	2.748(9)	177(9)	*x,y,1+z*
O1–H2W···O3	0.90(2)	1.95(3)	2.825(9)	164(9)	*-x,-y,-z*
N4–H4A···O2	0.89(2)	2.41(5)	3.229(9)	152(8)	*-1+x,y,z*
N4–H4B···O1	0.90(2)	2.19(6)	2.952(9)	142(8)	*intra*
N5–H5A···O1W	0.90(2)	2.15(4)	3.000(10)	158(9)	*x,y,-1+z*
N5–H5B···O1	0.92(2)	2.33(7)	3.029(9)	133(8)	*-x,-y,-z*
N6–H6A···O1	0.90(2)	2.23(7)	2.980(10)	141(8)	*1+x,y,z*
N6–H6B···O2	0.89(2)	2.30(5)	3.136(9)	155(9)	*intra*
N7–H7A···O1W	0.89(2)	2.27(3)	3.158(10)	172(9)	*-x,-y,-z*
N7–H7B···O2	0.89(2)	2.13(4)	2.973(10)	157(9)	*intra*

2. Calculation of aldehyde cyanosilylation conversion values by ^{1}H NMR analysis of crude products

a) Table 5, entry 4

The ^{1}H NMR spectrum of crude products from benzaldehyde cyanosilylation (with addition of internal standard - 1,2-dimethoxyethane) under the conditions described at Table 5, entry 4 (in MeOH), is displayed in Figure S6.

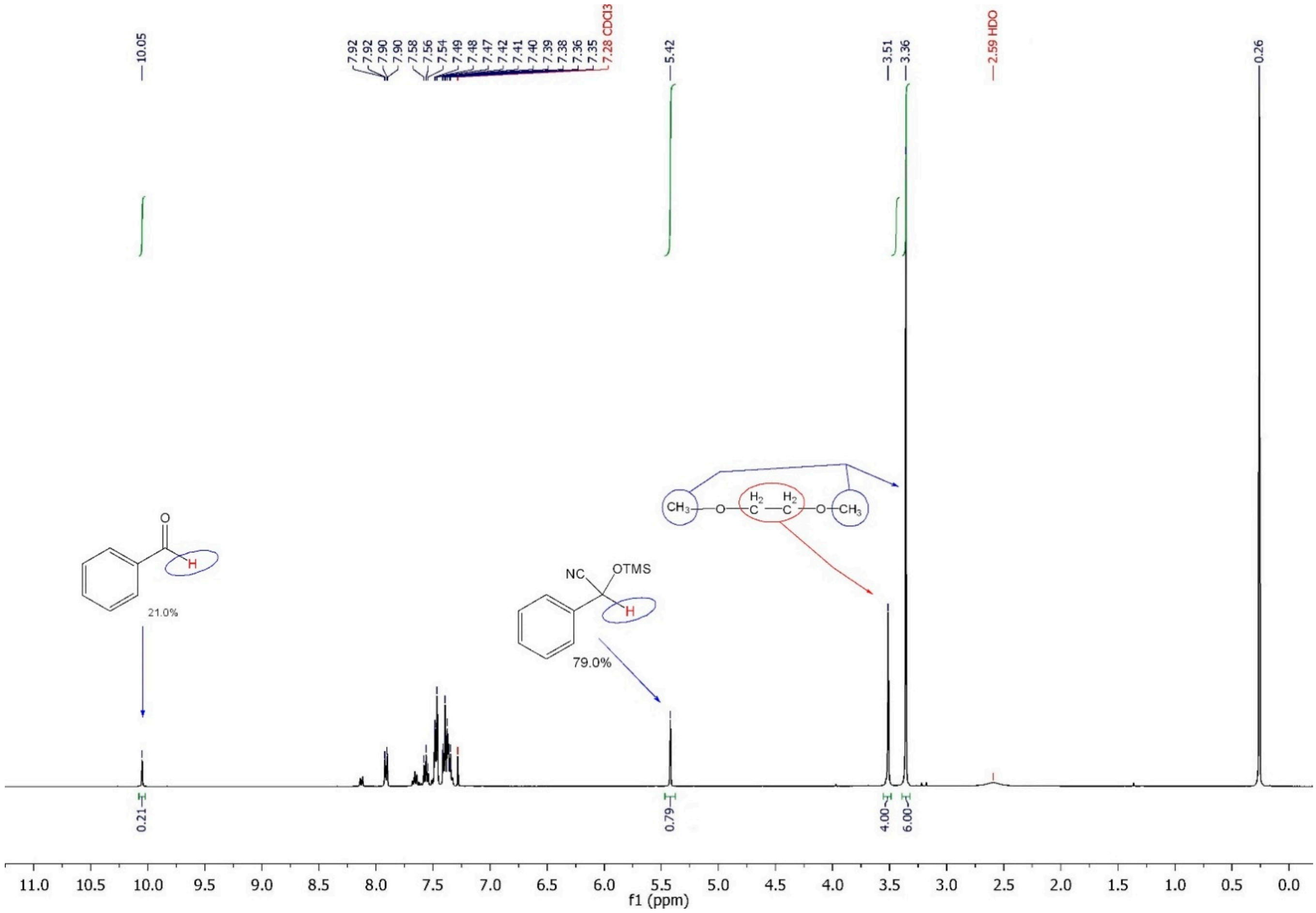

Figure S6. [1]H NMR spectrum of crude products from benzaldehyde cyanosilylation with TMSCN using 5 mol% of catalyst **2** (Table 5, Entry 4).

b) Table 5, entry 4

Conversion is calculated by dividing characteristic peak area of the corresponding product by sum of characteristic peak areas of substrate and corresponding product.

Conversion (%) = [a/(a + b)] x 100%

a: characteristic peak area of the corresponding product.

b: characteristic peak area of substrate.

The ^{1}H NMR spectrum of crude products from benzaldehyde cyanosilylation in a mixture of [DHTMG][*L*-Lactate] : MeOH (1:10, v/v) (2 mL) under the conditions described at Table 2, is displayed in Figure S7.

Characteristic peak area of 2-phenyl-2-((trimethylsilyl)oxy)acetonitrile = 1.00
Characteristic peak area of benzaldehyde = 0.08
Conversion = [1.00/(1.00+0.08)]x100 = 92.5%

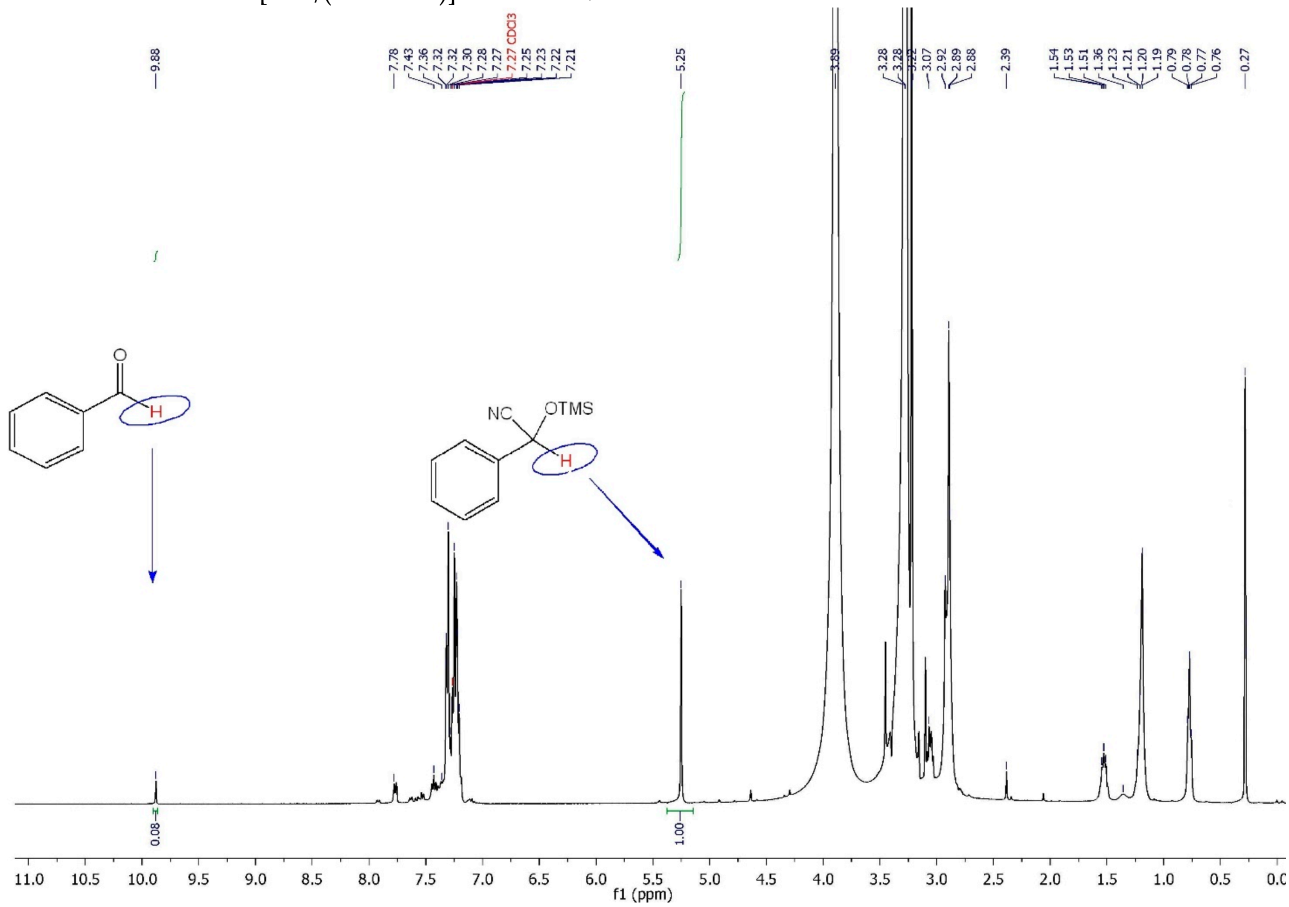

Figure S7. ^{1}H NMR spectrum of crude products from benzaldehyde cyanosilylation with TMSCN using 5 mol% of catalyst **2** in a mixture of [DHTMG][*L*-Lactate] : MeOH (1:10, v/v) (2 mL) (Table 5, Entry 4).