

Electronic Supplementary Information (ESI)

for the manuscript entitled

“Precursors for pyromellitic-bridged silica sol-gel hybrid materials”

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Information on pyromellitic diimide **1** and dipotassium pyromellitic diimide **2**:

Scheme 1: Pyromellitic diimide **1** and dipotassium pyromellitic diimide **2**.

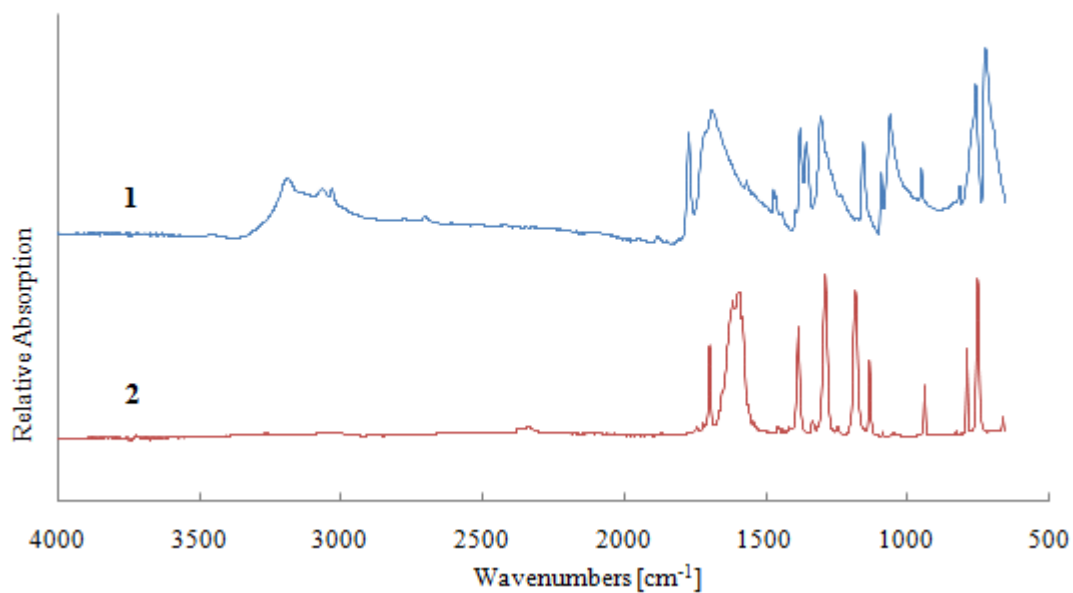


Figure 1: FT-IR of pyromellitic diimide **1** and dipotassium pyromellitic diimide **2**.

Table 1: Characteristic vibration of pyromellitic diimide and dipotassium pyromellitic diimide [cm^{-1}].

assignment	PMDI	K_2PMDI
NH	3197	-
C=O	1771	1699
C=O	1712	1619
C=O	1694	1592
C-N	1306	1288

Table 2: ^1H and ^{13}C NMR assignments of pyromellitic diimide **1** and dipotassium pyromellitic diimide

	^1H [ppm]	^{13}C [ppm]
	1;2	1 ; 2 ; 3
	8.10 ; 11.83	117.09; 137.78; 167.46
	7.16	110.85; 142.45; 184.31

Information on bis(trimethoxysilylpropyl)pyromellitic diimide

3:

Scheme 2: Structure and atom labeling for bis(trimethoxysilylpropyl)pyromellitic diimide **3**.

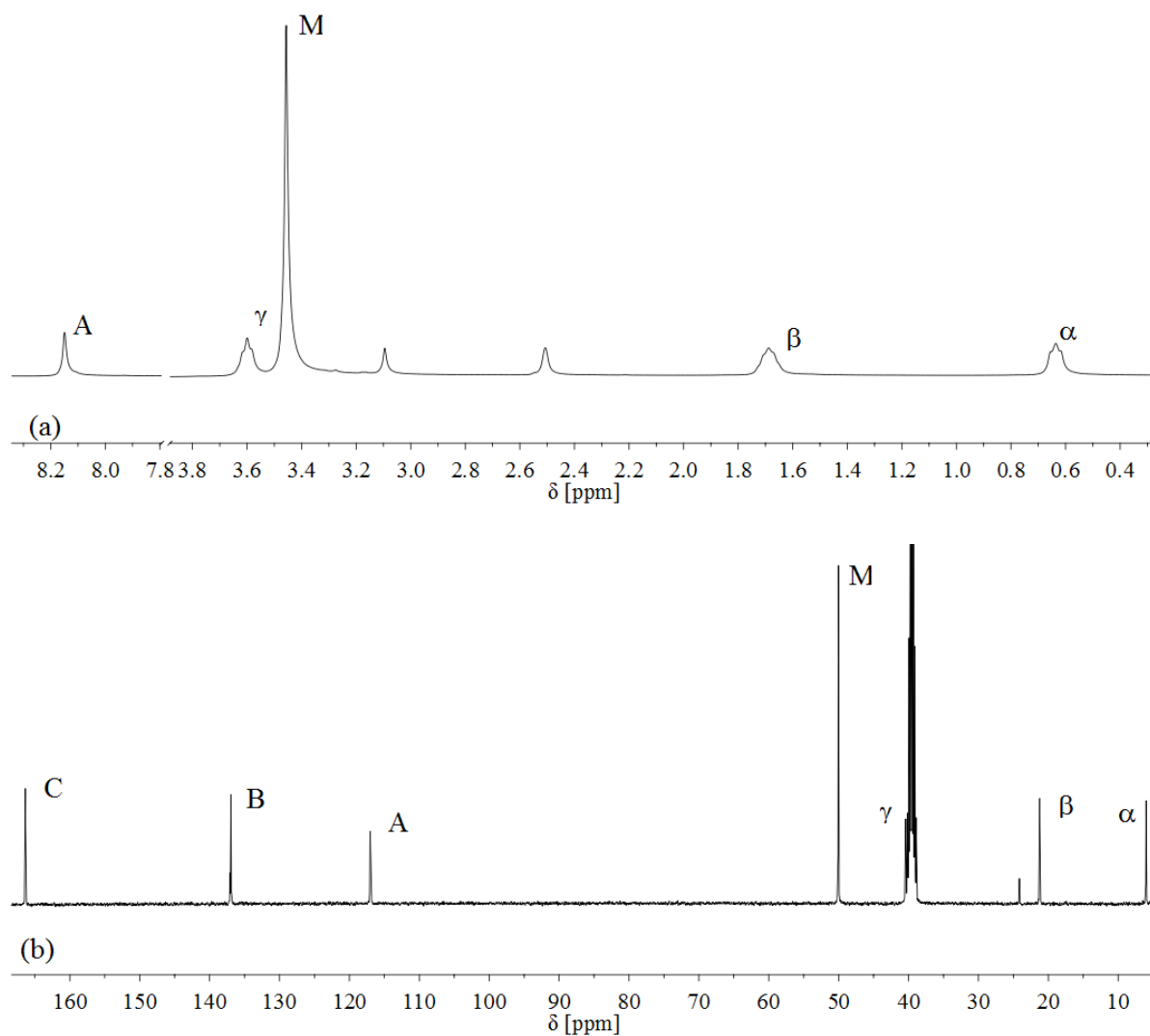


Figure 2: (a) ¹H and (b) ¹³C NMR spectra of bis(trimethoxysilylpropyl)pyromellitic diimide.

Table 3: ¹H and ¹³C NMR assignment of bis(trimethoxysilylpropyl)pyromellitic diimide.

	M	-	α	β	γ	A	B	C
¹ H	3.46	-	0.64	1.69	3.60	8.15	-	-
¹³ C	50.03	-	6.01	21.15	40.41	116.95	136.94	166.35

Information on bis(triethoxysilylpropyl)pyromellitic diimide 4:

Scheme 3: Structure and atom labeling for bis(triethoxysilylpropyl)pyromellitic diimide **4**.

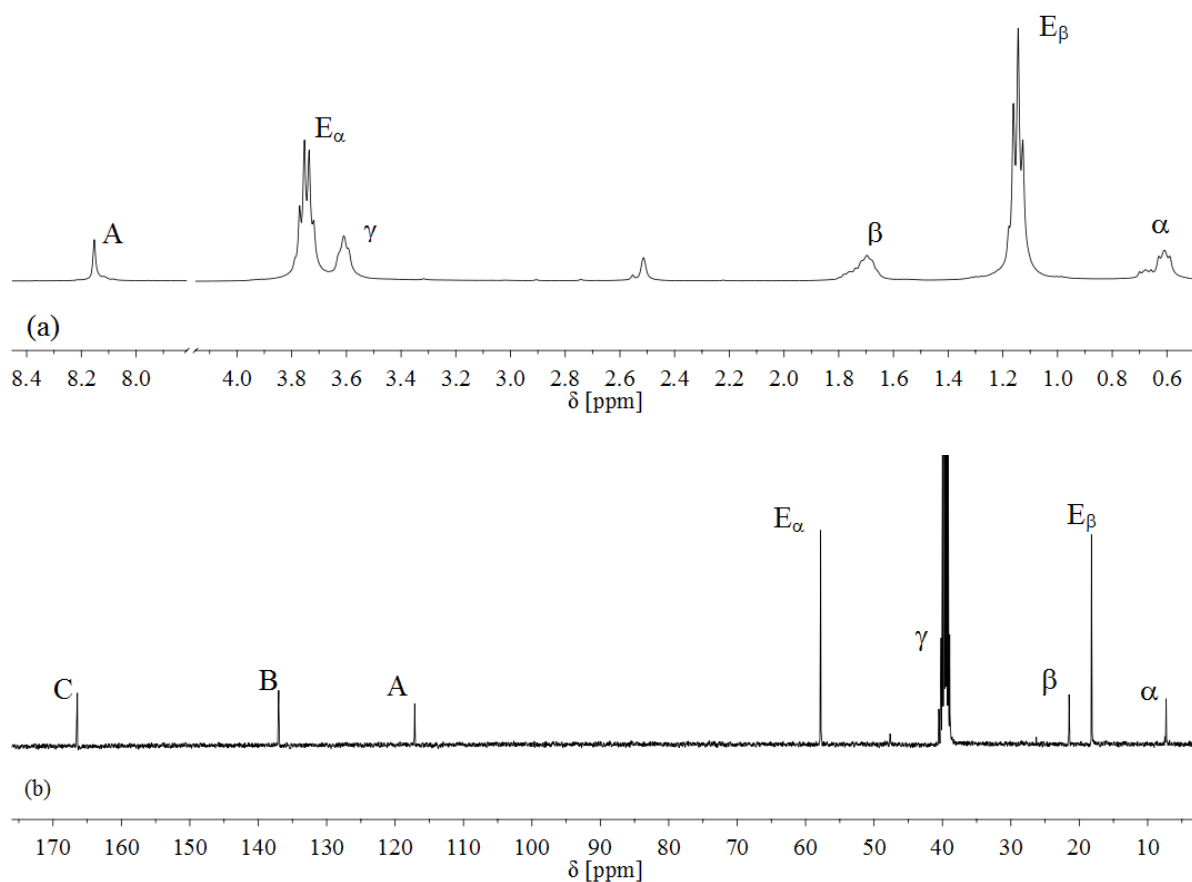


Figure 3: (a) ^1H and (b) ^{13}C NMR spectra of bis(triethoxysilylpropyl)pyromellitic diimide.

Tabel 4: ^1H and ^{13}C NMR assignment of bis(triethoxysilylpropyl)pyromellitic diimide.

	E_α	E_β	α	β	γ	A	B	C
^1H	3.46	1.14	0.62	1.70	3.61	8.15	-	-
^{13}C	57.76	18.17	7.25	21.44	40.47	117.08	136.96	166.38

Information on bis(triethoxysilylethyl)pyromellitic diimide **5**:

Scheme 4: Structure and atom labeling for bis(triethoxysilylethyl)pyromellitic diimide **5**.

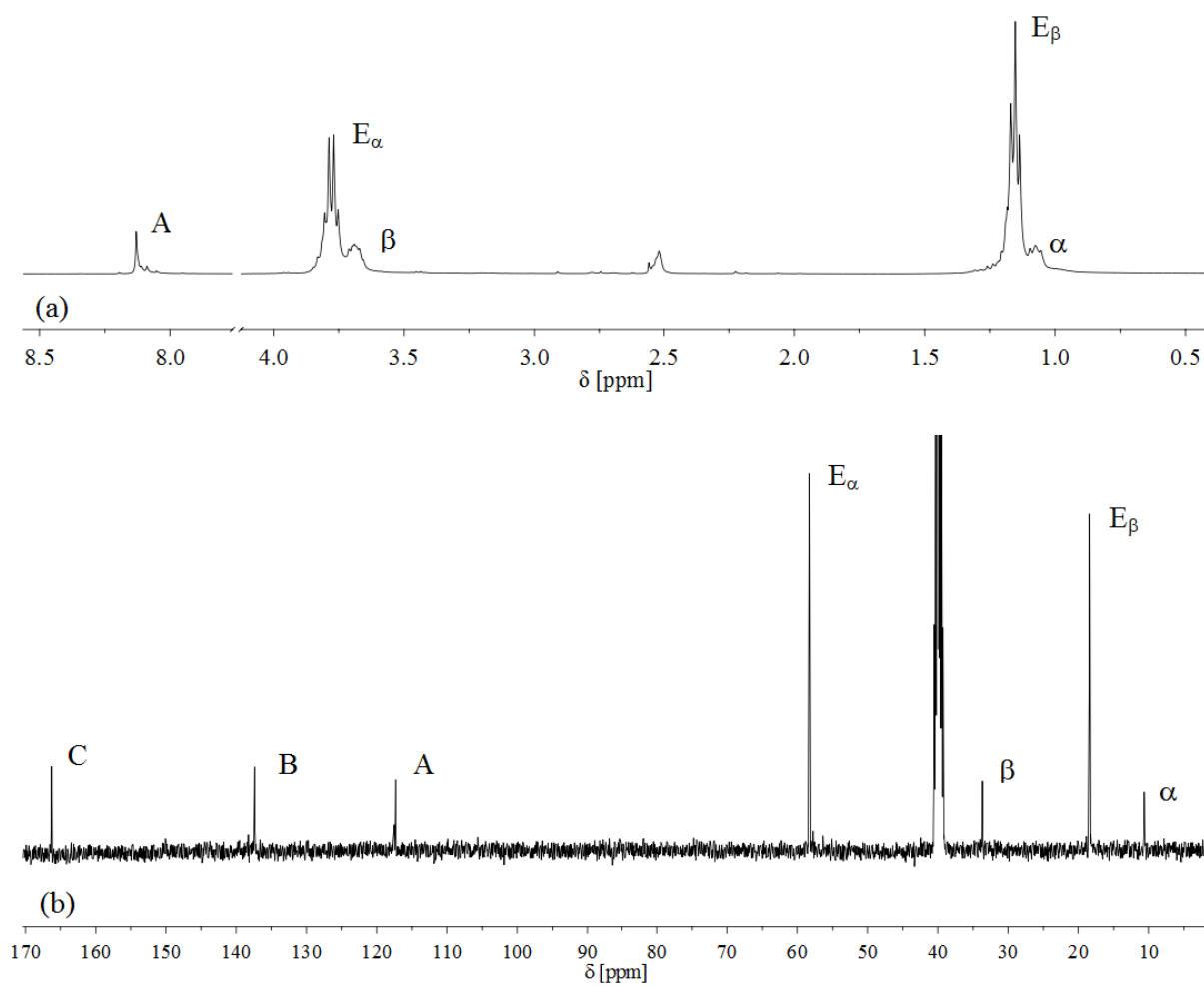


Figure 4: (a) ^1H and (b) ^{13}C NMR spectra of bis(triethoxysilylethyl)pyromellitic diimide.

Table 5: ^1H and ^{13}C NMR assignment of bis(triethoxysilylethyl)pyromellitic diimide.

	E_α	E_β	α	β	γ	A	B	C
^1H	3.77	1.15	1.08	3.69	-	8.13	-	-
^{13}C	57.89	18.02	10.24	33.29	-	116.92	136.99	165.87

Information on bis(triethoxysilylmethyl)pyromellitic diimide

6:

Scheme 5: Structure and atom labeling for bis(triethoxysilylmethyl)pyromellitic diimide **6**.

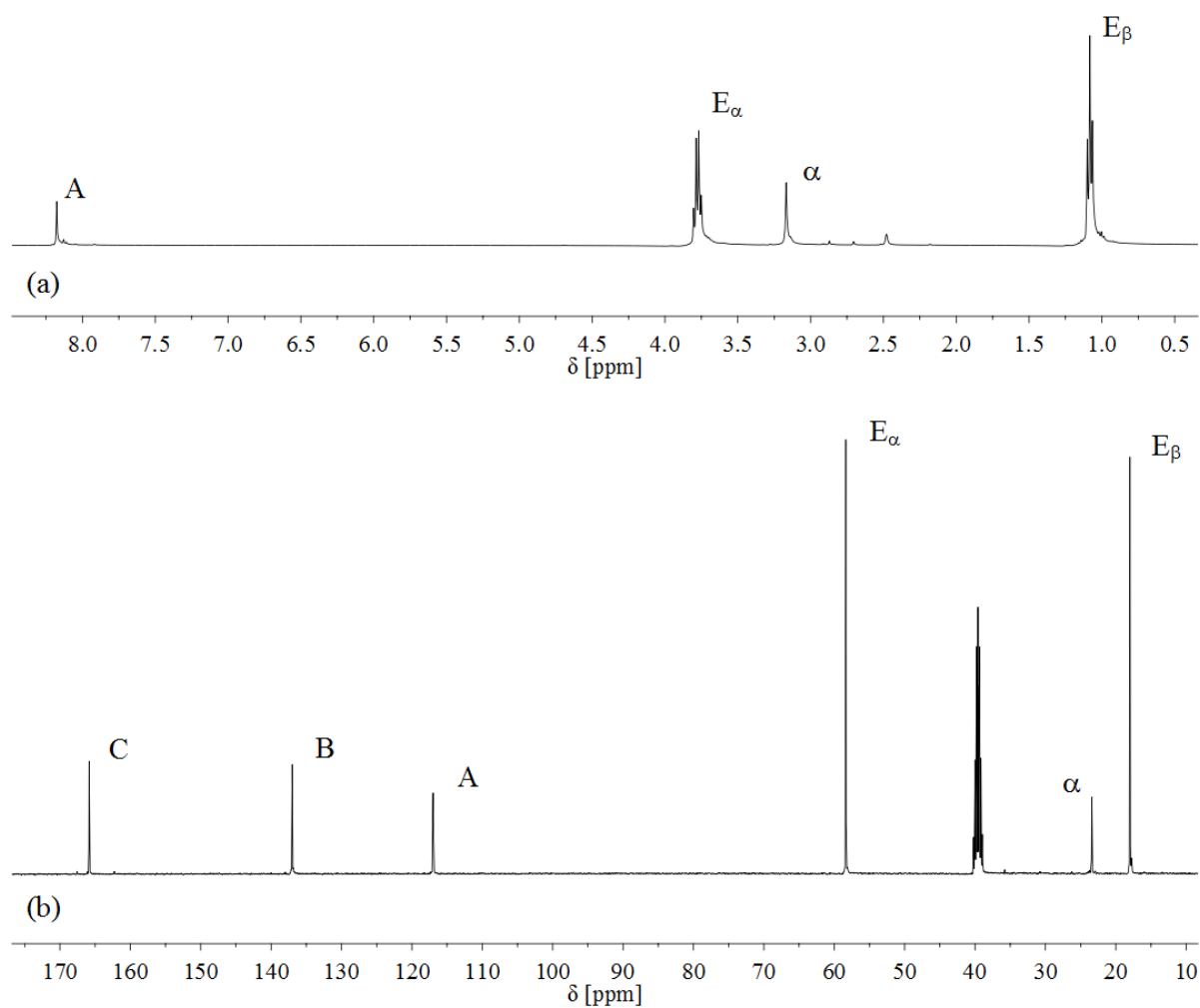


Figure 5: (a) ^1H and (b) ^{13}C NMR spectra of bis(triethoxysilylmethyl)pyromellitic diimide.

Tabel 6: ^1H and ^{13}C NMR assignment of bis(triethoxysilylmethyl)pyromellitic diimide.

	E_α	E_β	α	β	γ	A	B	C
^1H	3.81	1.13	3.21	-	-	8.22	-	-
^{13}C	58.30	17.94	23.35	-	-	116.94	136.95	165.79