ESI

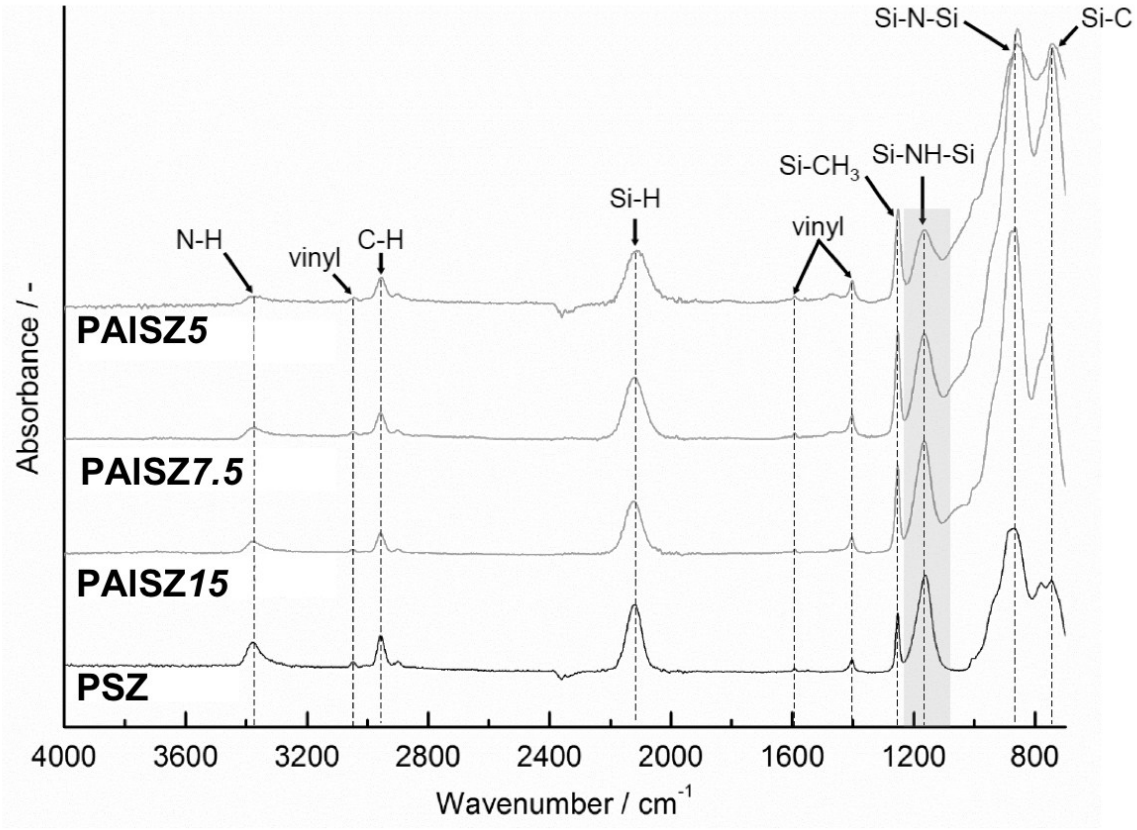

Fig. 1SI. FTIR spectra of PSZ and PAISZX (*X* = *15*→*5*) samples.

Table 1SI. Calculated ^{27}Al NMR parameters for two crystalline structures and for the models presented in Figure 5.

	δ_{iso} (ppm)	C_Q (MHz)	η
Crystalline structures			
Tris(aluminium hydride dimethylamine)-ICSD 290274			
Al1 (AlN_2H_2)	157.8	13.1	0.4
Al2 (AlN_2H_2)	160.0	12.3	0.5
Al3 (AlN_2H_2)	159.4	12.0	0.5
Tris(dimethylaluminium) hexakis(methylhydrazido)aluminate-ICSD 173483			
Al1 (AlN_6)	27.5	1.0	0.7
Al2 (AlN_2C_2)	180.1	15.9	0.8
Al3 (AlN_2C_2)	175.9	13.7	1.0
Models			
Model I (coord 3)			
Al1 (AlN_3)	164.0	30.2	0.2
Al2 (AlN_2H)	186.3	32.3	0.1
Al3 ($AlNH_2$)	227.4	37.1	0.1
Model II (coord 4)			
Al1 (AlN_3H)	133.6	14.6	0.0
Al2 (AlN_3C)	131.9	13.9	1.0
Model III (coord 4)			
Al1 (AlN_4)	119.7	16.8	0.1
Model IV (coord 5)			
Al1 (AlN_4C)	85.8	4.3	0.8
Al2 (AlN_5)	67.8	4.4	0.6
Model V (coord 6)			
Al1 (AlN_4C_2)	67.5	9.9	0.3
Model VI (coord 6)			
Al1 (AlN_5C)	53.8	12.9	0.3

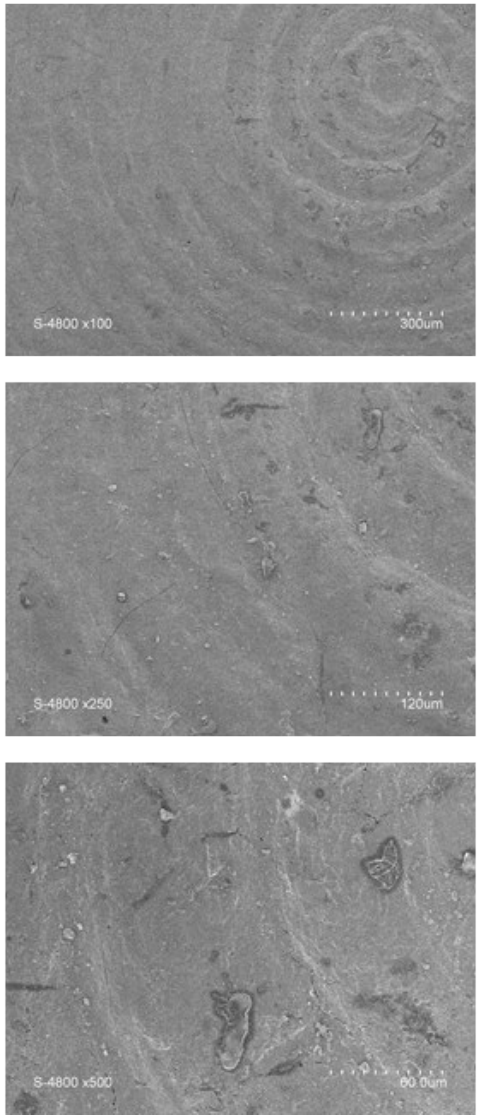

Fig. 2SI. SEM images of ceramics prepared at 1000 °C and derived from the **PAlSZ*3.75*** sample warm-pressed at 80 °C