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Supplementary Information

Superionically Conducting β''-Al_2O_3 Thin Films Processed Using Flame Synthesized Nanopowders

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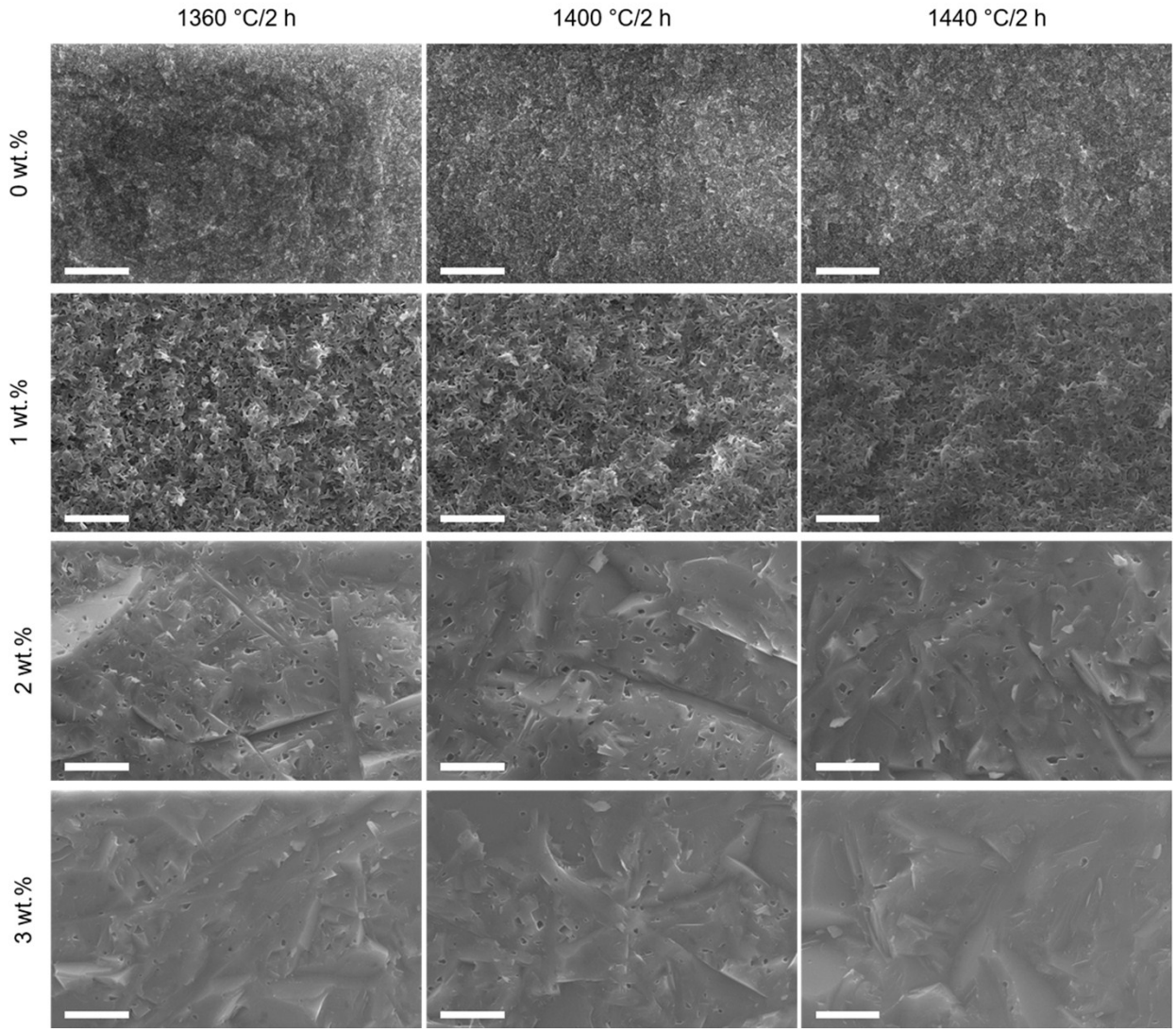

Fig. S1. Low mag. SEM fracture surface images of NAMO-xTiO_2 (x= 0, 1, 2, 3) sintered to selected temperatures (Scale bar = 10 μm).

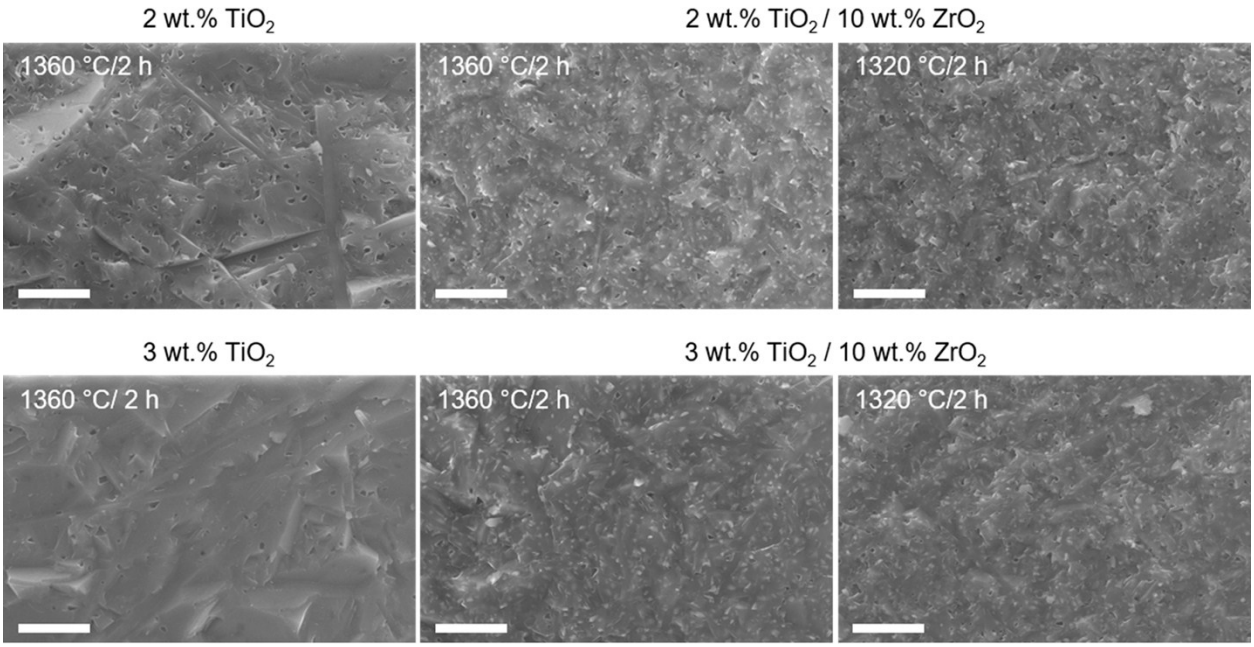

Fig. S2. Low mag. SEM fracture surface images of sintered NAMO-xTiO_2-10ZrO_2 (x= 2, 3) (Scale bar = 10 μm).

Table S1. Phase fractions of sintered NAMO-xTiO_2-10ZrO_2 (x= 2, 3).

	Sintering schedule	β'' fraction [wt.%]	β fraction [wt.%]	t-ZrO_2 fraction [wt.%]	m-ZrO_2 fraction [wt.%]
NAMO-2TiO_2	1360 °C/2 h	65.4±0.9	34.6±0.6	-	-
NAMO-2TiO_2-10ZrO_2	1360 °C/2 h	82.3±0.9	4.1±0.4	11.0±0.2	2.6±0.1
	1320 °C/2 h	83.5±0.9	3.4±0.4	10.7±0.2	2.3±0.1
NAMO-3TiO_2	1360 °C/2 h	58.4±0.9	41.6±0.7	-	-
NAMO-3TiO_2-10ZrO_2	1360 °C/2 h	61.0±0.9	28.0±0.7	9.0±0.2	2.0±0.1
	1320 °C/2 h	70.0±0.8	18.7±0.5	9.7±0.1	1.5±0.1