Supplementary information:

Table S1. Studied alkali borate compositions and synthesis temperatures employed.

Composition		Temperature, °C							
		900	950	1000	1050	1100	1150	1200	1250
Li_2O×	$0.5B_2O_3$	✓	✓	✓	✓	✓	✓	✓	✓
	$1.0B_2O_3$	✓	✓	✓	✓	✓	✓	✓	✓
	$2.0B_2O_3$	✓	✓	✓	✓	✓	✓	✓	✓
	$3.0B_2O_3$	✓	✓	✓	✓	✓	✓	✓	✓
Na_2O×	$1.0B_2O_3$	✓	✓	✓	✓	✓	✓	✓	✓
	$2.0B_2O_3$	✓	✓	✓	✓	✓	✓	✓	✓
	$3.0B_2O_3$	✓	✓	✓	✓	✓	✓	✓	✓
K_2O×	$1.0B_2O_3$			✓		✓		✓	✓
	$2.0B_2O_3$			✓		✓		✓	✓
	$3.0B_2O_3$			✓		✓		✓	✓

Table S2. Studied alkaline earth borate compositions and synthesis temperatures employed.

Composition		Temperature, °C			
		1000	1100	1200	1250
MgO×	$0,5B_2O_3$	✓	✓	✓	✓
	$1.0B_2O_3$	✓	✓	✓	✓
	$1,5B_2O_3$	✓	✓	✓	✓
	$2.0B_2O_3$	✓	✓	✓	✓
	$2,5B_2O_3$	✓	✓	✓	✓
	$3,5B_2O_3$	✓	✓	✓	✓
	$5.0B_2O_3$	✓	✓	✓	✓
MgO×*)	$1,5B_2O_3$	✓	✓	✓	✓
	$2,5B_2O_3$	✓	✓	✓	✓
	$3,5B_2O_3$	✓	✓	✓	✓
CaO×	$0,5B_2O_3$	✓	✓	✓	✓
	$1.0B_2O_3$	✓	✓	✓	✓

	$1,5B_2O_3$	✓	✓	✓	✓
SrO×	$0,5B_2O_3$	✓	✓	✓	✓
	$1.0B_2O_3$	✓	✓	✓	✓
	$1,5B_2O_3$	✓	✓	✓	✓
BaO×	$0,5B_2O_3$	✓	✓	✓	✓
	$1.0B_2O_3$	✓	✓	✓	✓
	$1,5B_2O_3$	✓	✓	✓	✓

*) Heating in argon.

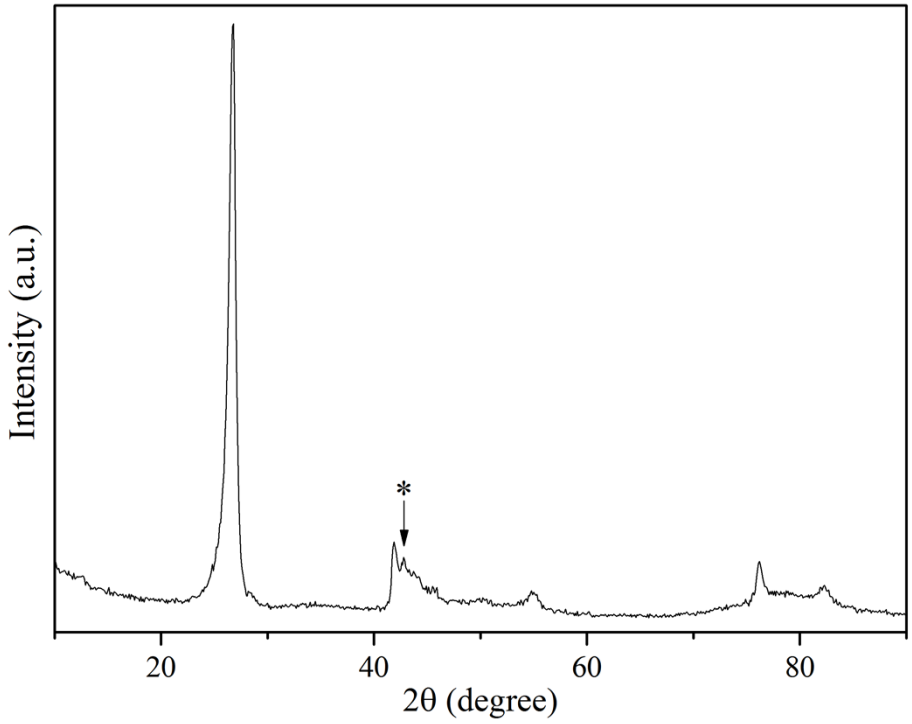

Fig. S1 X-ray diffraction pattern of the reaction products of lithium tetraborate with ammonia at 1200 °C. All reflections except the one marked with an asterisk were assigned to a hexagonal phase with the lattice constants a= 2.50 Å and c= 6.69 Å.

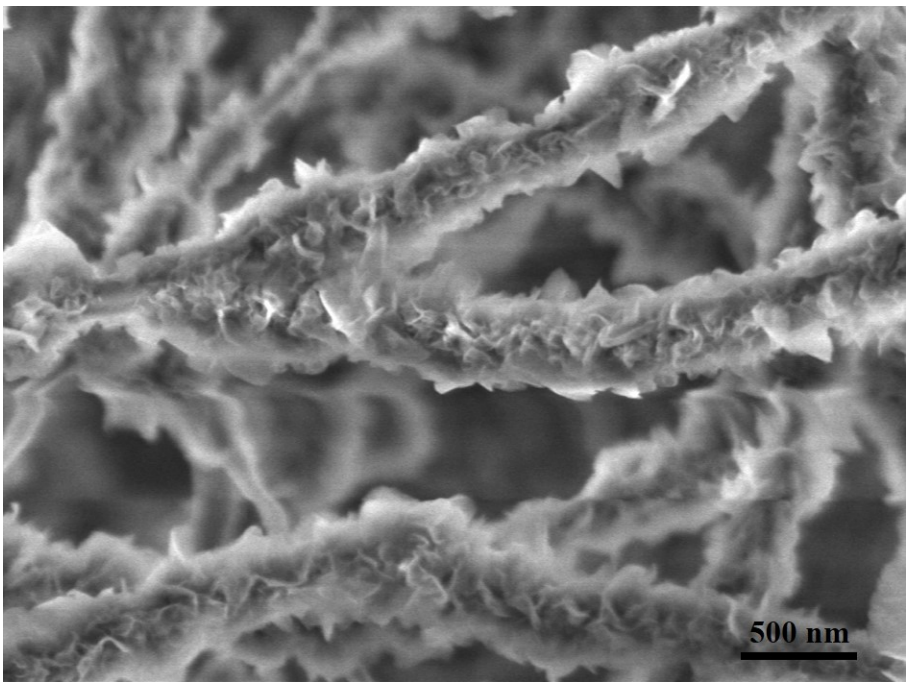

Fig. S2. SEM image of BNGPs grown on BNNTs surface from lithium tetraborate at 1200 ºC.

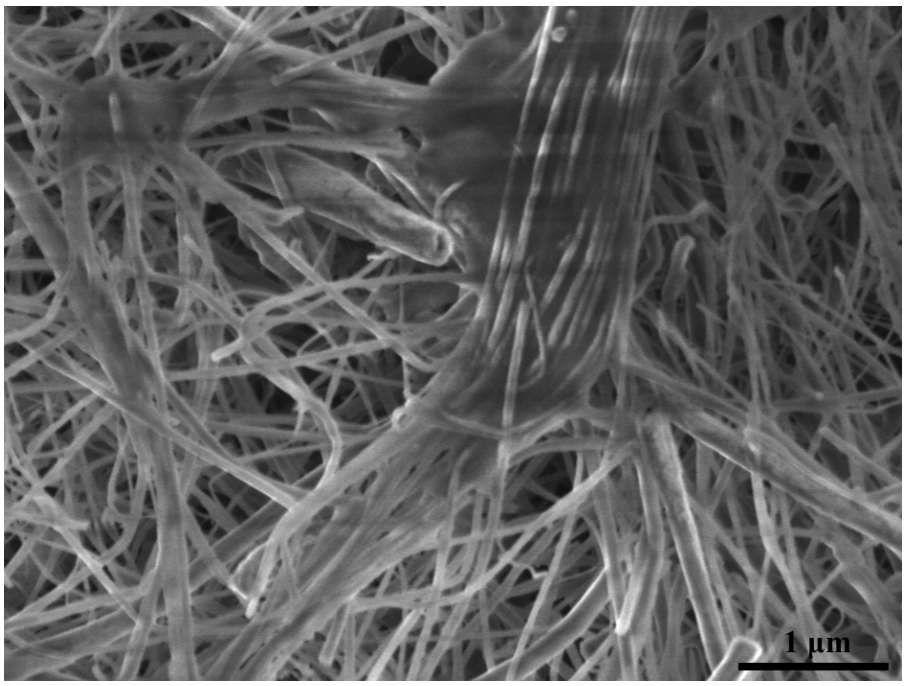

Fig. S3 SEM image of $MgO{\cdot}1.5B_2O_3$ reacted with ammonia at 1200 ^{o}C.

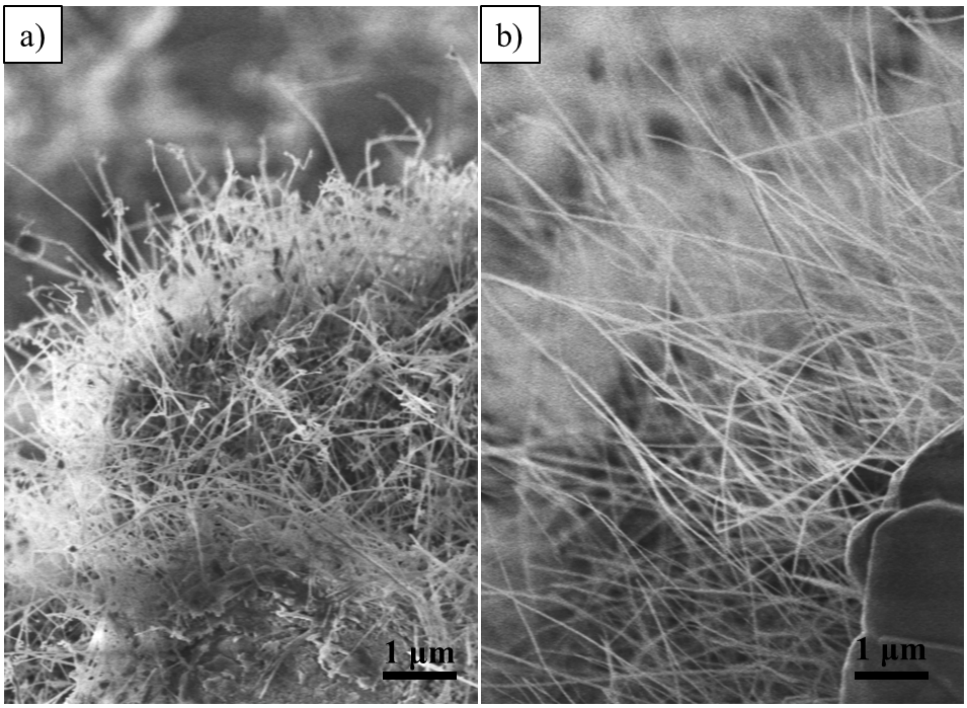

Fig. S4 SEM images of samples heated in argon and synthesized in ammonia at 1200 °C from $MgO{\cdot}1.5B_2O_3$ (a) and $MgO{\cdot}3.5B_2O_3$ (b).