Supplementary Material (ESI) for CrystEngComm

Supplementary Data

The Interplay of Crystallization Kinetics and Morphology during the Formation of SnO_2 Nanorods: Snapshots of the Crystallization from fast Microwave Reactions

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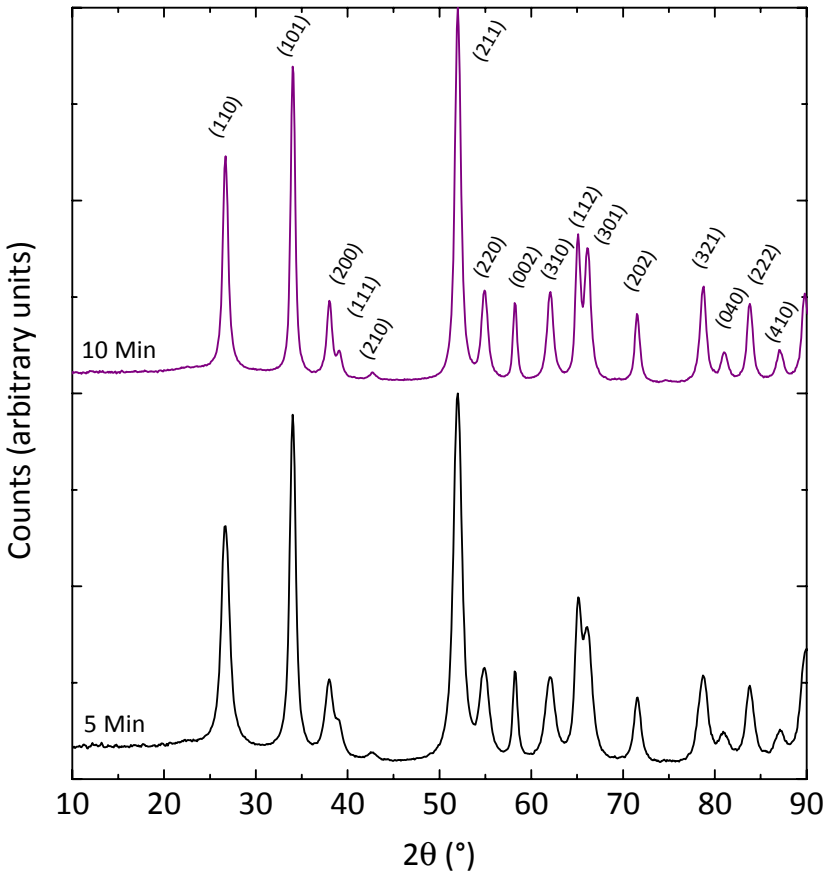

Fig. S1: X-Ray diffraction pattern of the samples prepared with 1 minute heating ramp.

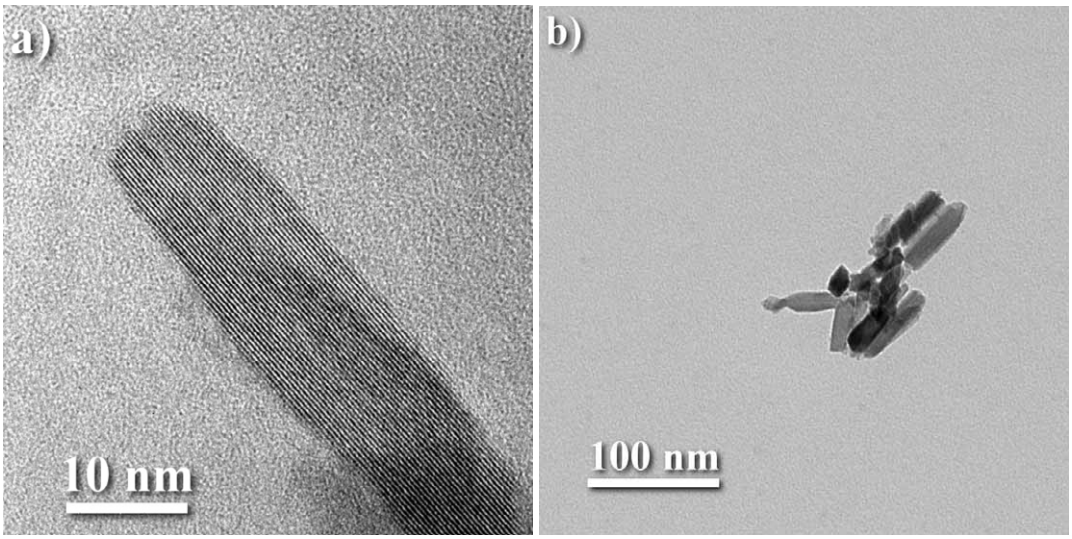

Fig. S2: a) High resolution TEM image of a single SnO_2 nanorod. b) Bundle of SnO_2 nanorods, obtained after 6 minutes of reaction time.

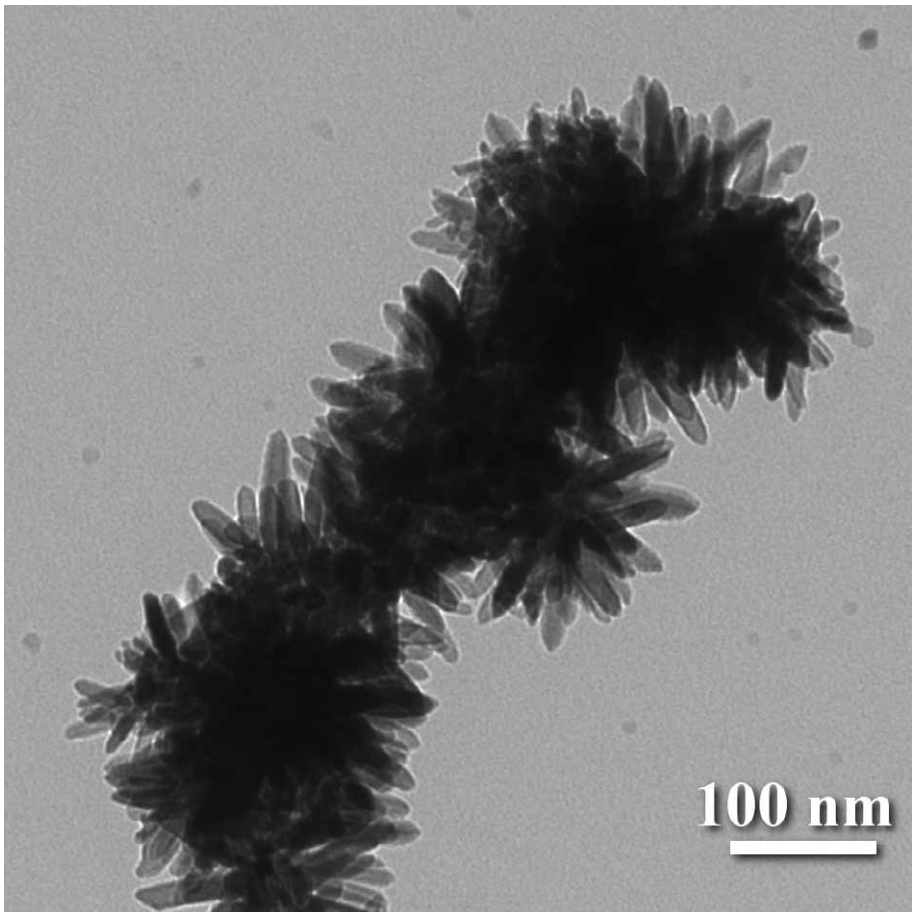

Fig. S3: TEM image of the sample heated for 11 minutes.

Table S1. Calculated crystallite sizes of the samples heated for various times at 46 bar (uncertainities correspond to the threefold of the estimated standard deviations (e.s.d.) from refinement.)

Heating time /min	CS (short) /nm	CS (long) /nm
0	3.37 ± 0.02	3.37 ± 0.02
1	4.07 ± 0.04	4.07 ± 0.04
2.5	3.95 ± 0.04	8.68 ± 0.21
5	4.09 ± 0.02	9.17 ± 0.13
10	4.28 ± 0.02	10.60 ± 0.13
15	15.58 ± 0.12	36.69 ± 0.81
20	16.85 ± 0.10	39.13 ± 0.69
30	17.74 ± 0.10	47.16 ± 0.81
45	37.05 ± 0.24	77.09 ± 1.20
60	48.48 ± 0.30	110.31 ± 2.25
90	54.84 ± 0.45	160.87 ± 3.84

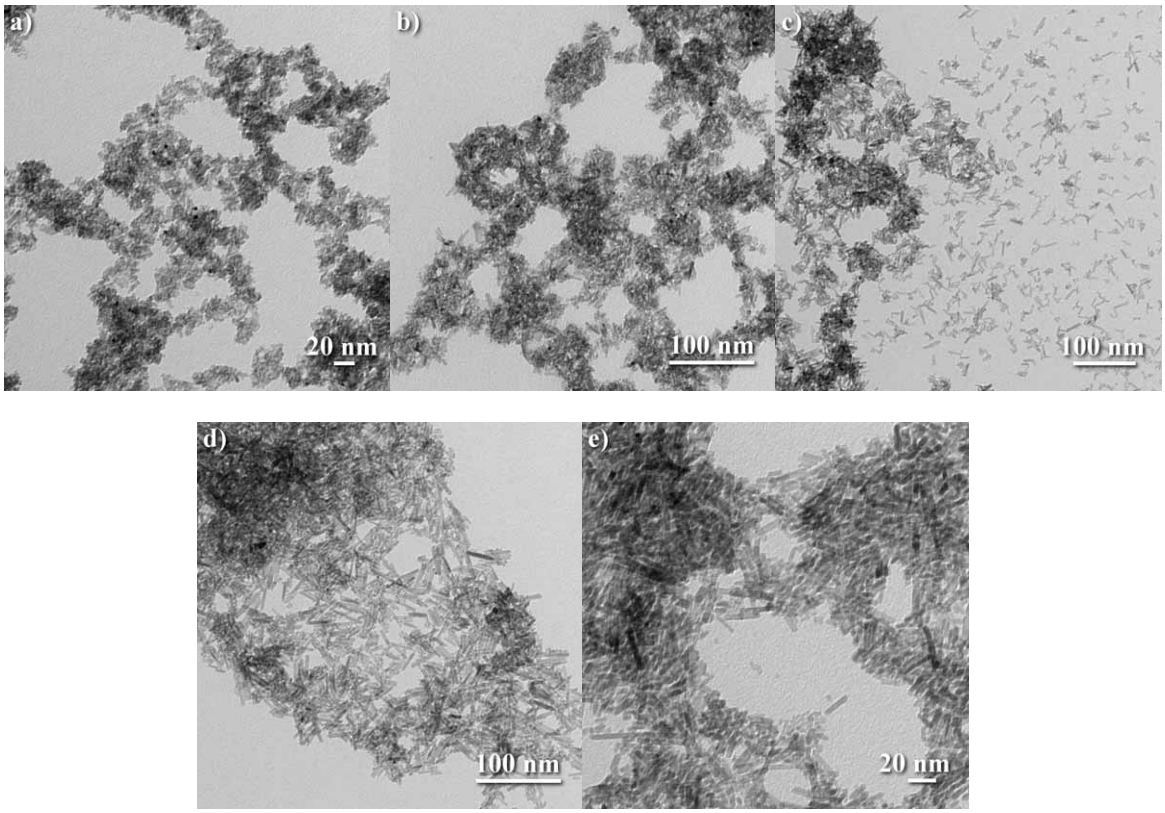

Fig. S4: TEM micrographs of the obtained rod-shaped materials. The images correspond to reaction times of 0 (a), 1 (b), 2.5 (c), 5 (d) and 10 min. (e).

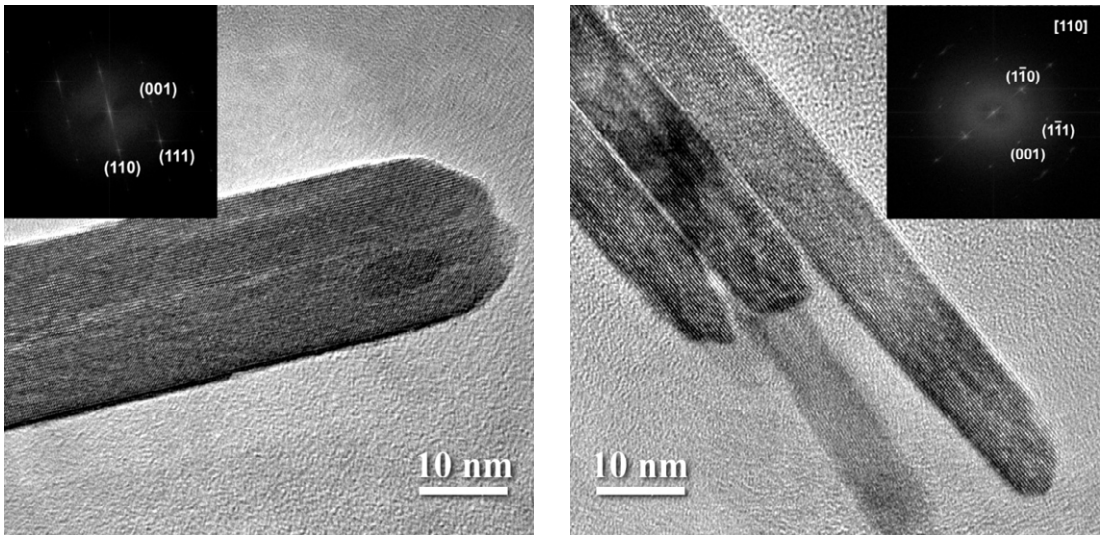

Fig. S5: Nanorods after 30 min. (left) and 45 min. (right) insets show Fourier transformation and indexing of the corresponding reciprocal lattice points (cassiterite).

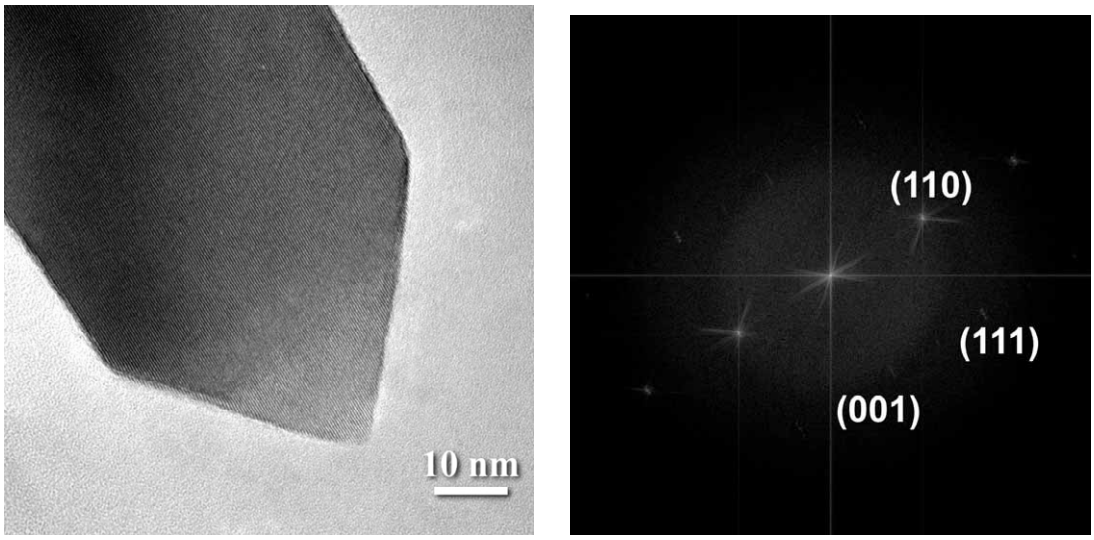

Fig. S6: Nanorods after 60 min. (left) and FFT showing the enclosing crystal faces (right)

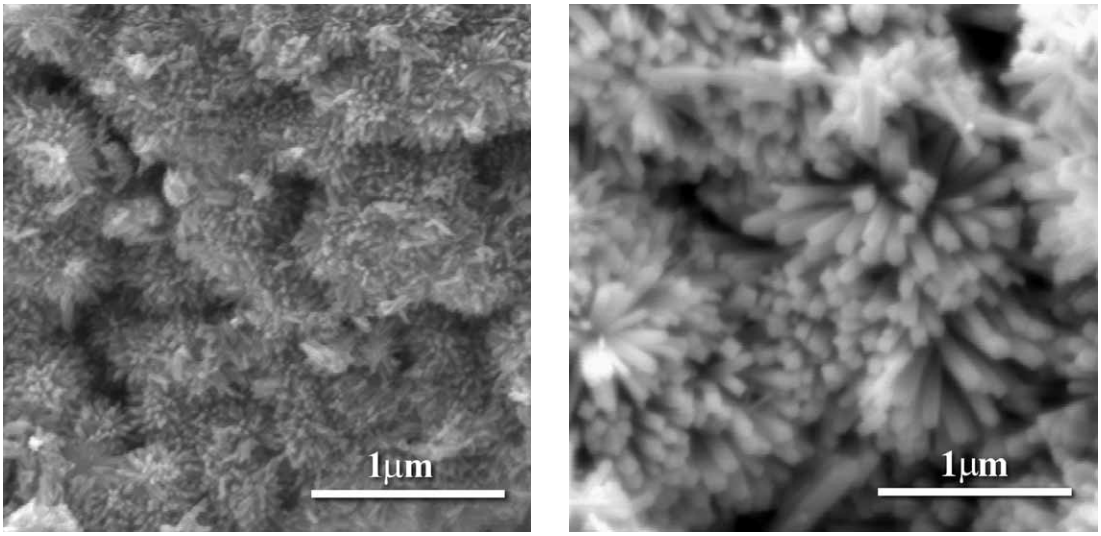

Fig. S7: Left: SEM overview pictures of nanorods after 20 min. Right: SEM overview pictures of nanorods after 90 min.

Table S2: Exact positions of the various Raman modes observed in the nanostructured SnO_2 samples

	Raman mode /cm^{-1}					
Sample	*	E_g	B_{1u}	A_{1g}	A_{2u}	B_{2g}
15 Min	355	477	576	628	694	771
20 Min	355	476	573	628	693	770
30 Min	354	476	576	628	694	768
45 Min	355	477	578	629	694	769
60 Min	-	477	-	624	-	767
90 Min	-	471	-	625	689	767

Table S3: Exact positions of the various IR-modes observed in the nanostructured SnO_2 samples

	IR mode /cm^{-1}				
Sample	A_{2u} (TO)	surface	E_u (TO)	A_{2u} (LO)	E_u (LO)
15 Min	496	515	641	-	-
20 Min	506	-	649	-	-
30 Min	502	-	652	-	-
45 Min	491	-	656	662	-
60 Min	490	520	630	656	683
90 Min	508	529	632	671	690

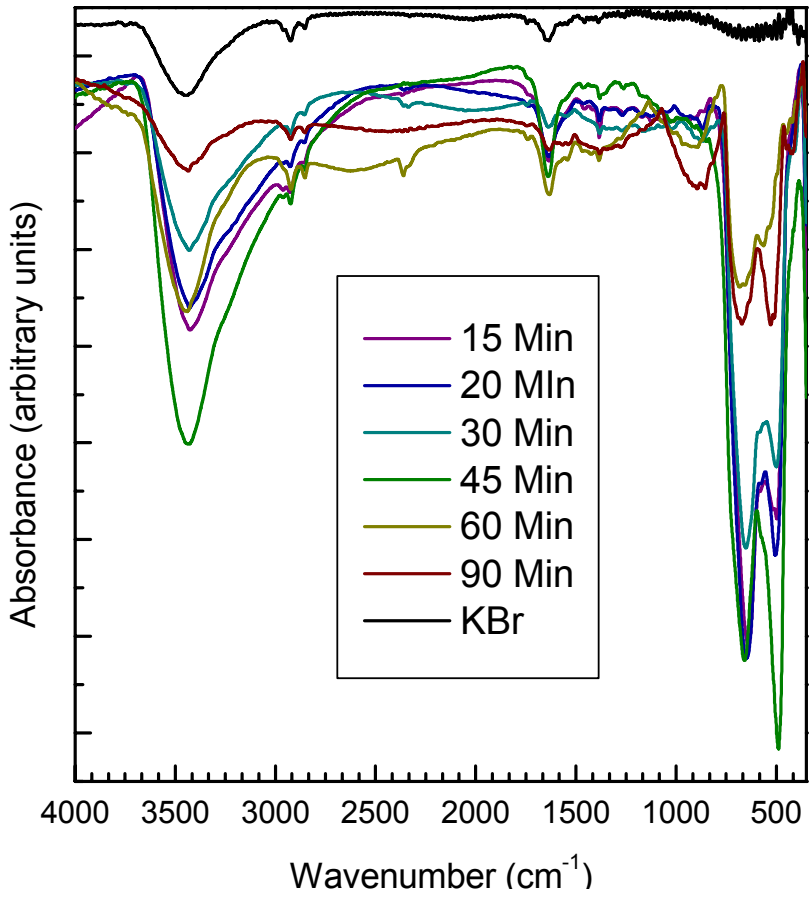

Fig. S8: Normalized FT-IR-spectra of the samples prepared at 46 bar