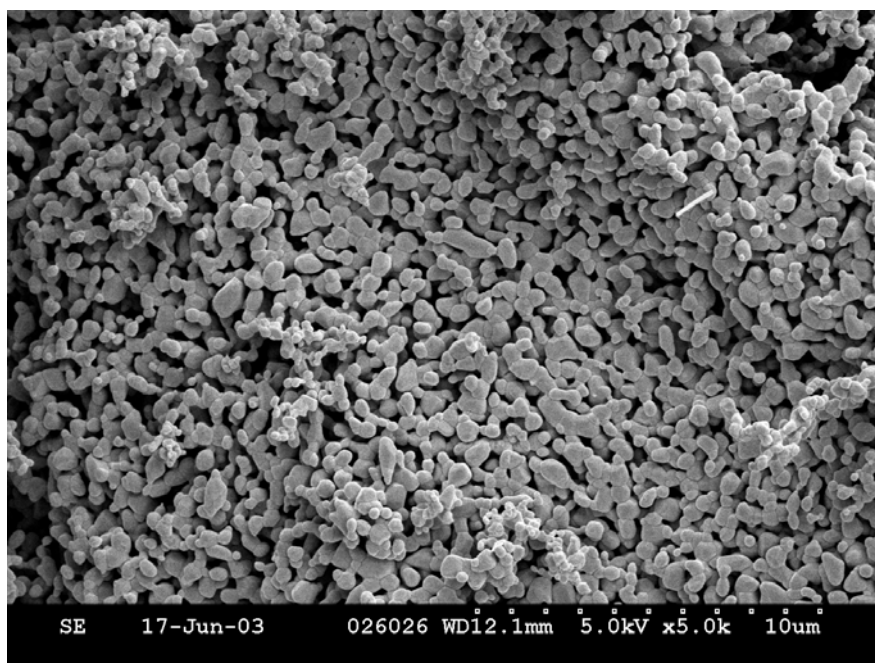


Supporting information 1

FESEM Images of the powder prepared without any chemical modifiers
calcined at 1000 °C

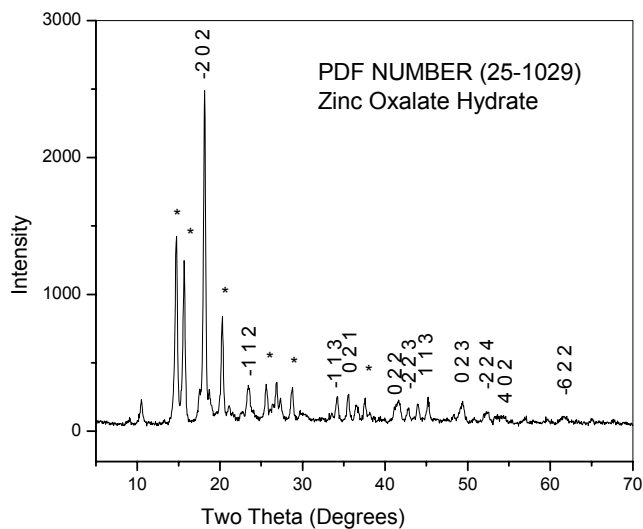


SEI Fig 1. FESEM of the powder prepared without any chemical modifiers
calcined at 1000 °C

Supporting information 2

XRD of precursors

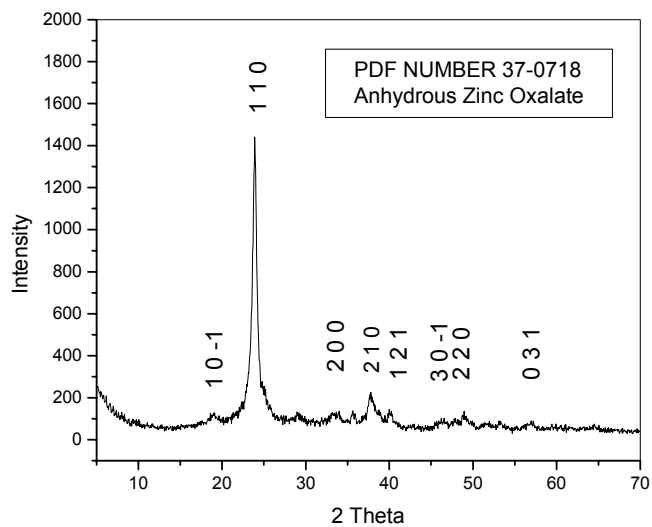
1) With chemical modifiers (Zn: Ox: EG :DEA 1:2:2:0.1) at 80 °C



SEI Fig 2. XRD of the xerogel with chemical modifiers (Zn: Ox: EG :DEA 1:2:2:0.1) at 80 °C (* unidentified phases)

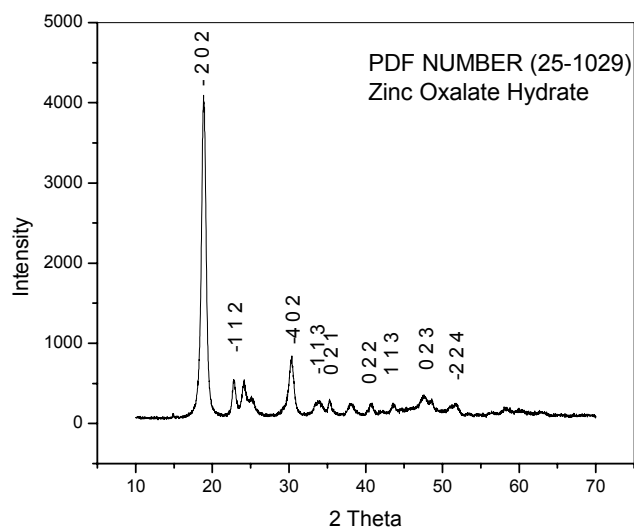
JCPDS (25-1029) Zinc oxalate hydrate			Experimental		
<i>hkl</i>	<i>d</i> (Å°)	Intensity	2θ	<i>d</i> (Å°)	Intensity
$\bar{2} 0 2$	4.77	100	18.16	4.88	100
$\bar{1} 1 2$	3.60	35	23.58	3.77	10.81
$\bar{1} \bar{1} 3$	2.65	35	34.17	2.62	8.92
0 2 1	2.55	25	35.38	2.52	9.82
0 2 2	2.22	30	41.58	2.17	7.14
1 1 3	2.03	18	45.38	2.05	7.14
0 2 3	1.88	25	49.60	1.83	6.25

2) With chemical modifiers (Zn: Ox: EG :DEA 1:2:2:0.1) at 250 °C



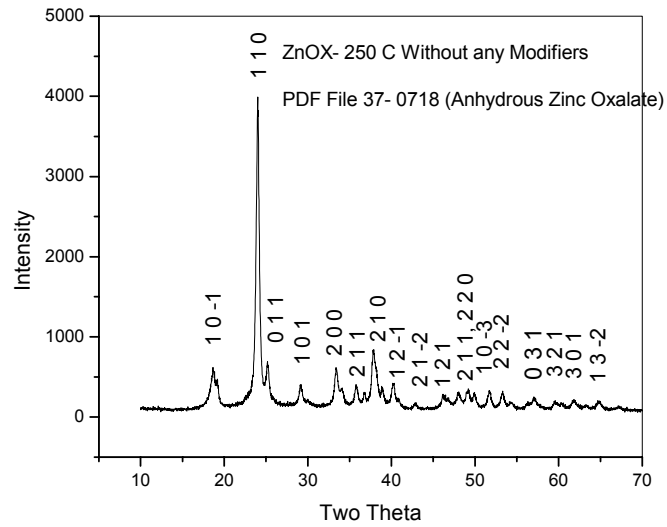
SEI Fig 3. XRD of the xerogel with chemical modifiers (Zn: Ox: EG :DEA 1:2:2:0.1) at 250 °C

3) Without chemical modifiers (Zn: Ox: EG :DEA 1:2:0:0) at 80 °C



SEI Fig 4. XRD of the xerogel without chemical modifiers (Zn: Ox: EG :DEA 1:2:0:0) at 80 °C

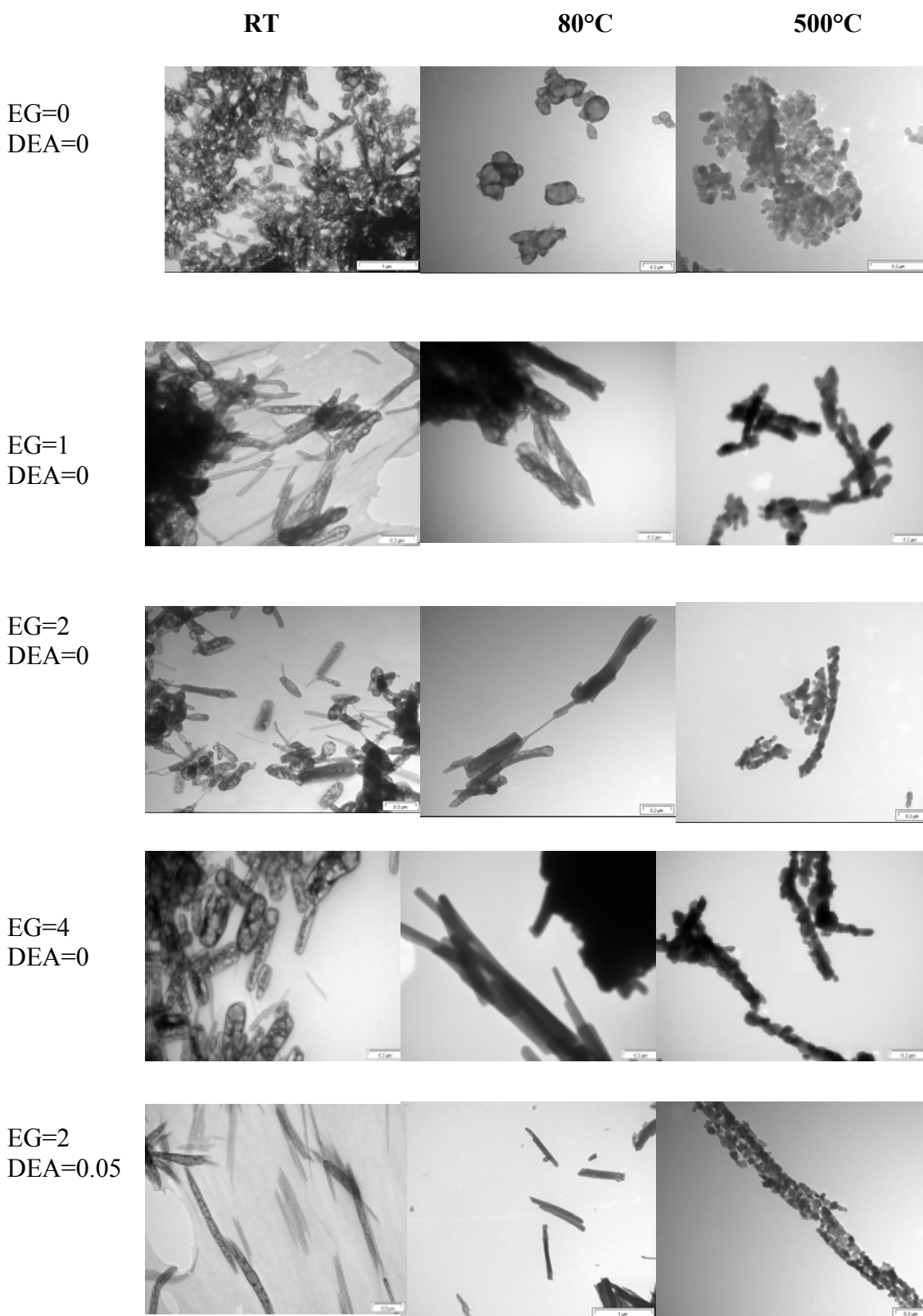
4) Without chemical modifiers (Zn: Ox: EG :DEA 1:2:0:0) at 250 °C



SEI Fig 5. XRD of the xerogel without chemical modifiers (Zn: Ox: EG :DEA 1:2:0:0) at 250 °C

Supporting Information 3

FESEM showing the effect of chemical modifiers (EG; Ethylene glycol, DEA; Diethanolamine) at different molar ratios on ZnO morphology.

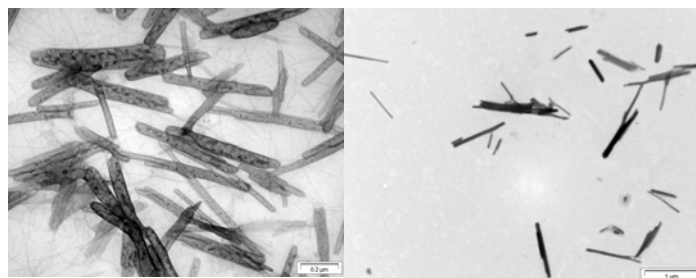


RT

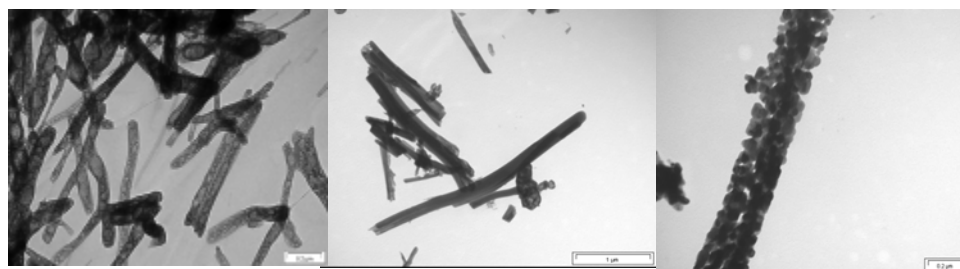
80°C

500°C

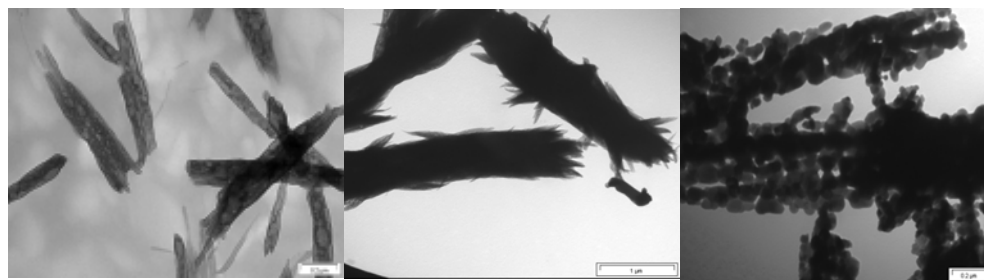
EG=2
DEA=0.1



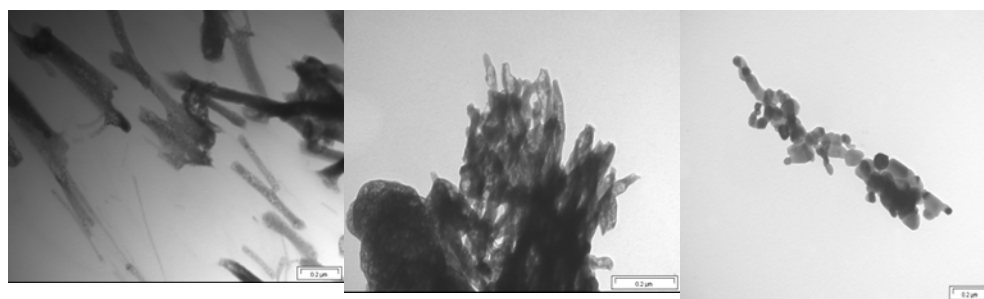
EG=2
DEA=0.2



EG=2
DEA=0.4



EG=0
DEA=0.01



EG=1
DEA=0.01

