Supplementary material (ESI) for Journal of Materials Chemistry

Low-Temperature Solventless Synthesis of Carboxylate-Capped ZnO Nanoparticles

Marc Estruga,*[a] Concepción Domingo[b] and José A. Ayllón*[a]

[a] *Departamento de Química, Universidad Autónoma de Barcelona, Campus UAB, 08193 Bellatera, Spain. Fax: Fax: +34 93581 2920; Tel: +34 93581 2164; E-mail: JoseAntonio.Ayllon@uab.es; mestruga@qf.uab.cat*

[b] *Instituto de Ciencia de Materiales de Barcelona, CSIC, Campus UAB, 08193 Bellaterra, Spain.*

Electronic Supplementary Information

Table S1. Experimental details of additional samples.

Carboxilyc Acid	ZAD:acid ratio	Mixing Method	Temperature (ºC)	Time (h)	Cited in
Phenylvaleric	5:1	CE	90	67	Figure 2B
Phenylvaleric	3:1	CE	90	67	Figure 2B
Lauric	5:1	Grinding	90	70	Figure 5
TODA	5:1	CE	90	78	Figure 4B

Table S2. Carboxylate peaks position of samples PhAc-ZnO (a); Pip-ZnO (b); FPhAc-ZnO (c); and Cin-ZnO (d) in the ATR-FTIR spectrum (Figure S2).

Sample	COO st asymm (cm^{-1})	COO st symm (cm^{-1})	$\Delta\nu$ (cm^{-1})	Coordination mode
PhAc-ZnO	1551	1400	151	Bridging
Pip-ZnO	1548	1398	150	Bridging
FPhAc-ZnO	1549	1403	146	Bridging
Cin-ZnO	1544	1409	135	Bridging + chelate

Table S3. Synthesis time as a function of benzoic acid content.

% benzoic acid	Processing time at 90 ºC (h)
0	30
20	42
30	47
40	54
50	65
70	120
85	144

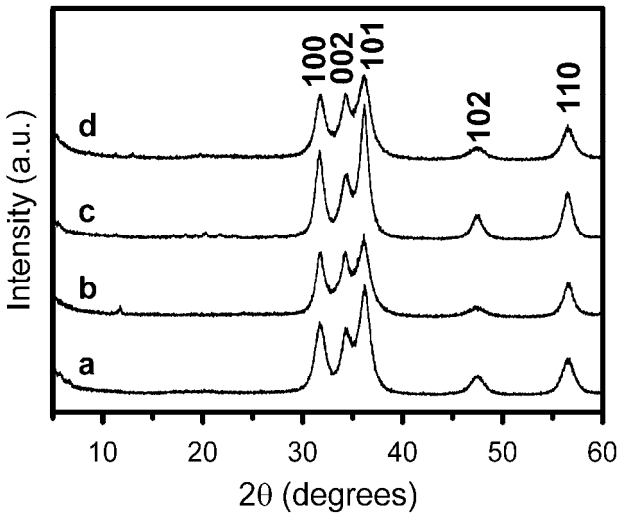

Figure S1. XRD patterns of several carboxylate-capped ZnO nanoparticles: PhAc-ZnO (a); Pip-ZnO (b); FPhAc-ZnO (c); and Cin-ZnO (d).

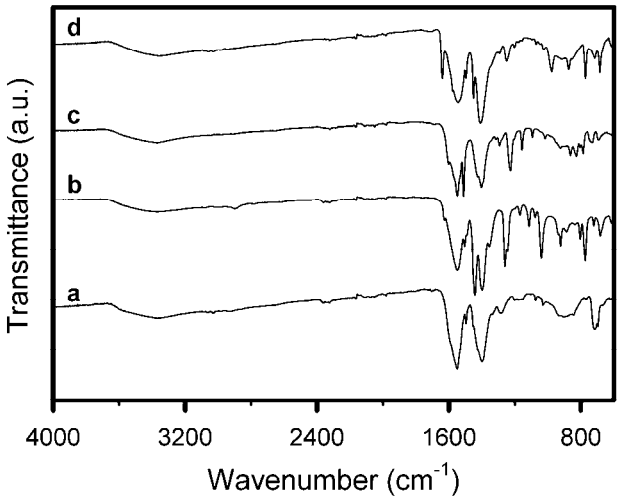

Figure S2. ATR-FTIR spectra of PhAc-ZnO (a); Pip-ZnO (b); FPhAc-ZnO (c); and Cin-ZnO (d).

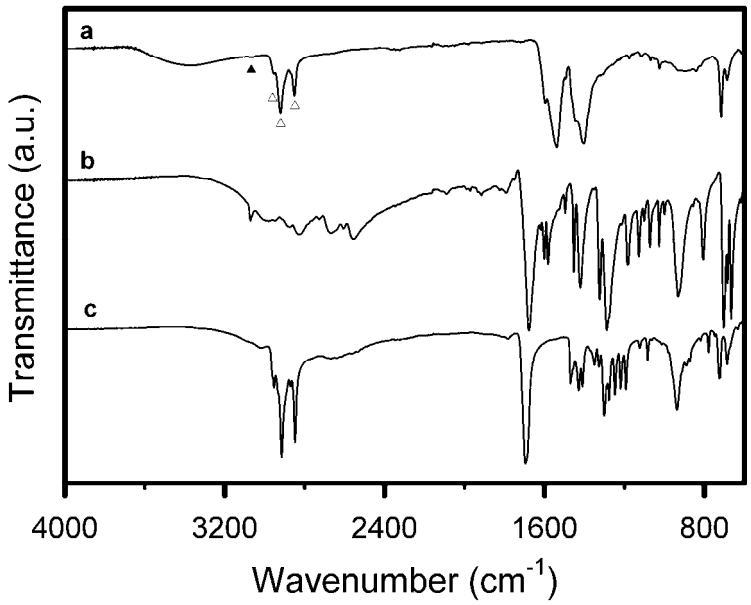

Figure S3. ATR-FTIR spectra of Bz-La-ZnO sample (a); benzoic acid (b) and lauric acid (c). Both ligands are present in the sample, as denoted by the aromatic C-H stretching peak (▼ at 3070 cm^{-1}) and aliphatic C-H stretching peaks (▽ at 2960, 2919 and 2849 cm^{-1}).

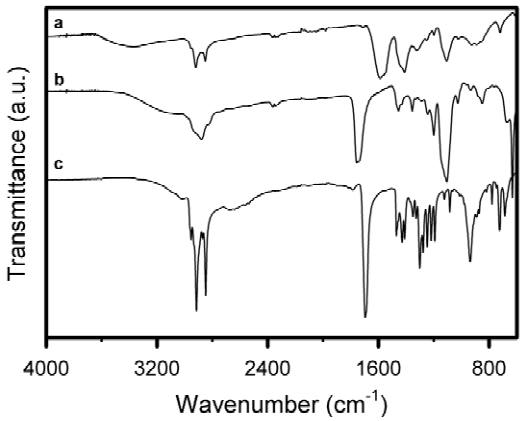

Figure S4. ATR-FTIR spectra of TODA-La-ZnO sample (a); 3,6,9-trioxadecanoic acid (b) and lauric acid (c).

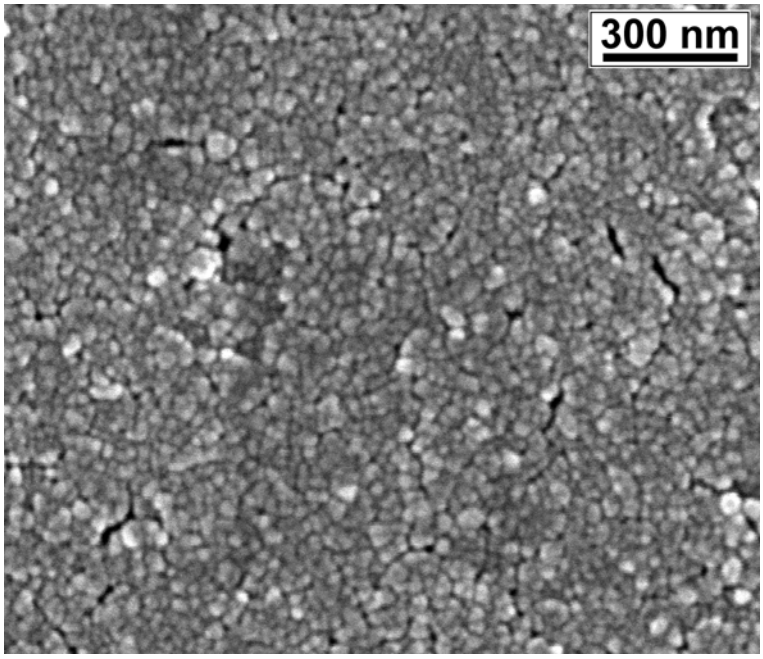

Figure S5. SEM micrograph of a ZnO thin film obtained by photo-assisted elimination of the laurate capping agent.