Phase-controlled synthesis of ZrO_2 nanoparticles for highly
transparent dielectric thin films

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Electronic Supplementary Information

Figure S1 Diffractograms of ZrO₂ nanopowders synthesized at (a & b) 220 and (c & d) 250 °C in a glass liner obtained after thermally treating them at (red) 250 °C for 1 h, (green) 500 °C for 1 h, (blue) 750 °C for 1 h and (black) not treated

Figure S2 DLS curves of the ZrO_2 -220-MEEAA based dispersion in PGMEA

Figure S3 (a) TGA curve of the MEEAA modified ZrO_2 -220 nanoparticles; and (b) the DTA curve (black) along with its profile fit (red) and the deconvolution curves (green) each representing an individual thermal process

Figure S4 (a) Dielectric loss factor of ZrO₂-220-MEEAA based capacitors measured at different electrical frequencies for capacitors with increasing cross-sectional area; (b) plot of the dielectric loss factor of ZrO₂-230-MEEAA based capacitors with two different cross-sectional areas measured between 100 Hz and 200 kHz; (c) plot of the dielectric loss factor of ZrO₂-250-MEEAA based capacitors with two different cross-sectional areas measured between 100 Hz and 200 kHz

Table S1: Mass-loss determined for the MEEAA modified ZrO_2 nanoparticles employing TGA

Sample	1 st mass-loss		2 nd mass-loss		3 rd mass-loss		4 th mass-loss		total	
	temp. (°C)	mass-loss (wt%)	temp. (°C)	mass-loss (wt%)	temp. (°C)	mass-loss (wt%)	temp. (°C)	mass-loss (wt%)	mass-loss (wt%)	mass-loss (wt%)
ZrO_2 -220-MEEAA	25-155	1.5	155-320	18.3	320-505	3.2	505-900	0.2		23.2