SUPPLEMENTARY MATERIALS:

Highly textured seed layers for the growth of vertically oriented ZnO nanorods

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Table S1. Table summarizing the parameters of the sol-gel process in relevant papers to which we are referring in the main body of the article. ZAD - zinc acetate dihydrate, MEA- monoethanolamine.

	Chemicals	Concentration of ZAD	Aging time	Substrate	Deposition	Preheating	Annealing
Ohyama et al.	ZAD, MEA, 2-methoxyethanol	0.75 M	N/A	Silica glass	Dip-coating	200 – 500°C, 10 min	500 – 800°C, 1 h, air
Greene et al.	ZAD, ethanol	0.005 M	N/A	ITO	Droplet	X	200 - 350°C, 20 min, air
Kim et al.	ZAD, MEA, isopropanol	0.3 – 1.3 M	24 h	Corning glass	Spin-coating	200 – 300°C, 10 min	650°C, 1 h, air
Wang et al.	ZAD, diethanolamine (DEA), isopropanol	0.32 M	N/A	Si/SiO2/Ti/Pt	Spin-coating	300 – 450°C, 10 min	550 – 800°C, 30 min, air
Demes et al.	ZAD, MEA, 1-butanol	0.09 – 1 M	3 h	Si	Spin-coating	300 – 540°C, 10 min	300 – 540°C, 1 h

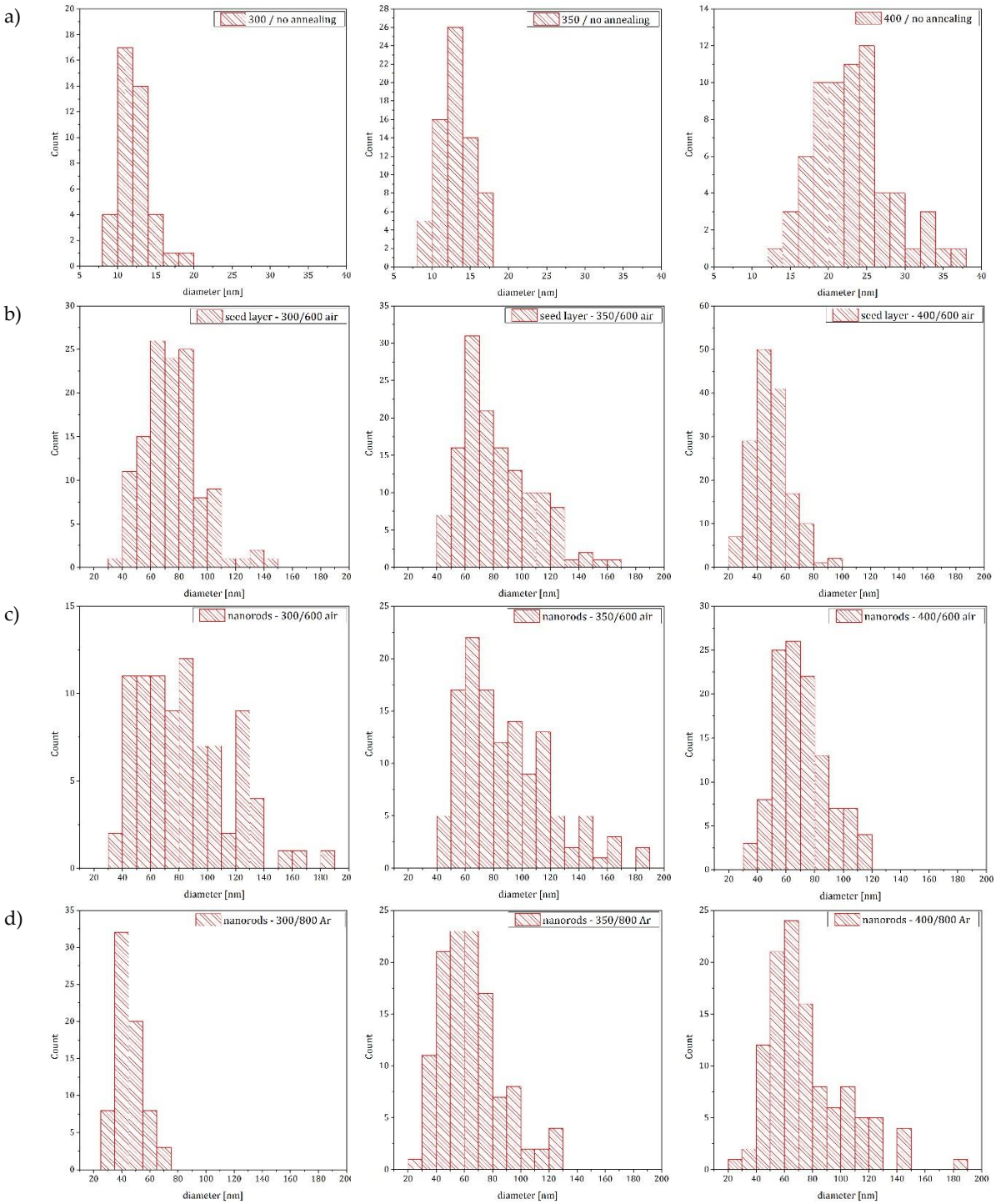

Figure S1. The size distributions of the crystallites of the seed layers and of the nanorods obtained by ImageJ software from SEM measurements. The heat treatment temperatures and surrounding atmosphere are specified in each graph. Row a) shows a moderately increasing size of xerogel crystallites with increasing preheating temperature. The broader size distribution for the preheating at 400°C is related to the initiation of coalescence of the crystallites. Row b) shows the seed layers annealed in the air at 600°C. It is clearly visible that after annealing the size distribution of the crystallites is narrowed as the preheating temperature is increased to 400°C. Row c) shows the size distribution of the nanorods grown on the seed layers annealed in the air at 600°C. The diameters of the nanorods and their distribution strongly correlate with the sizes of the seed layer crystallites. Row d) shows the distribution of top-face diameters of ZnO nanorods grown on the seed layers annealed in Ar at 800°C. The narrower distribution of the nanorod diameters for the preheating at 300°C and partly for 350°C is a consequence of faster growth of poorly oriented nanorods with strongly tapered morphology and is not directly related to the properties of the seed layer. The size distribution of the crystallites of the seed layer annealed in Ar is not available, because of their irregular shape.

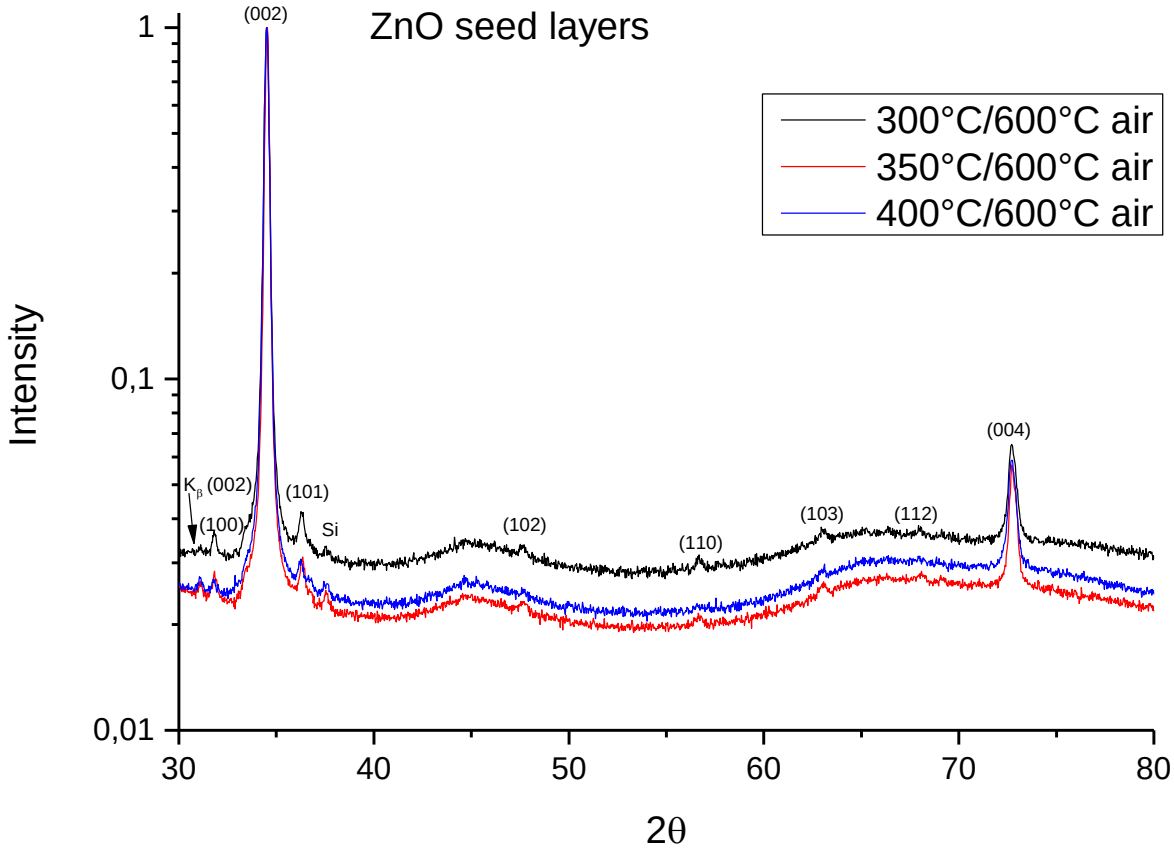

Figure S2. XRD diffractograms for ZnO seed layers scanned over the angular range 30° – 80° (2θ). The measured data were influenced partly by the silicon substrate; nevertheless, except of one reflection, the other peaks belong strictly to zinc oxide. The preferential orientation in c-axis was confirmed by the predominant intensity of (002) reflection. Seed layers with different preheating temperatures were studied: 300°C (black), 350°C (red) and 400°C (blue). All the samples were annealed in the air at 600°C.

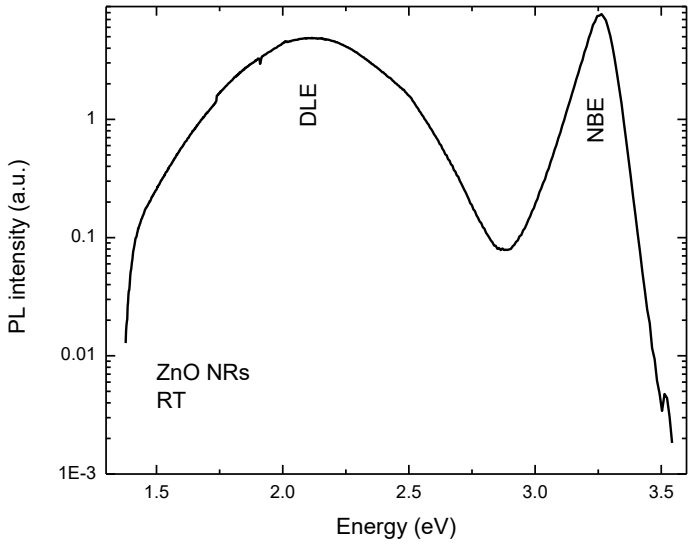

Figure S3. The room temperature PL spectrum of the as grown nanorods on the seed layer preheated to 400°C and annealed in air at 600°C. The PL spectra of other nanorod samples are qualitatively the same, since their optical properties are tightly related to the low growth temperature and the seed layer has a limited impact on the spectra.