

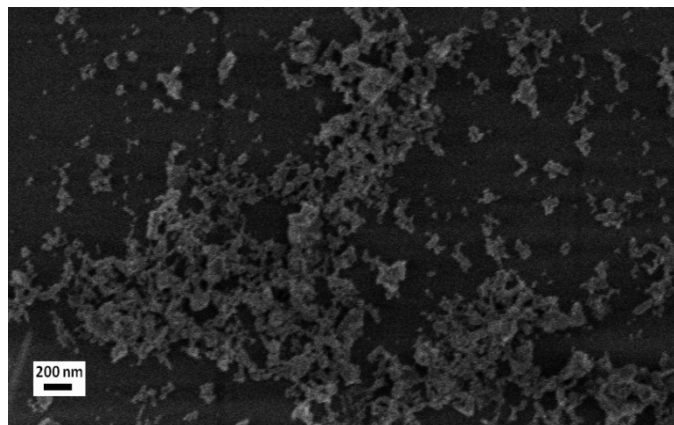
## Supporting Information

# Thin films of zinc oxide nanoparticles and poly(acrylic acid) fabricated by the layer-by-layer technique: a facile platform for outstanding properties

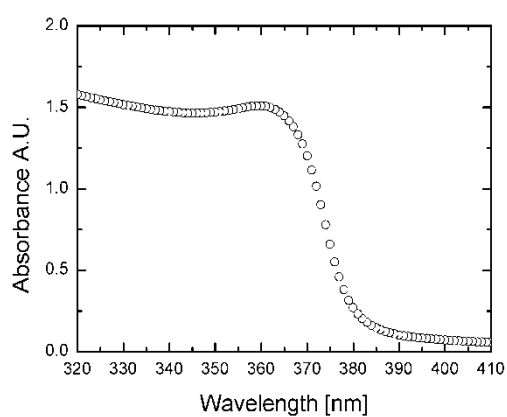
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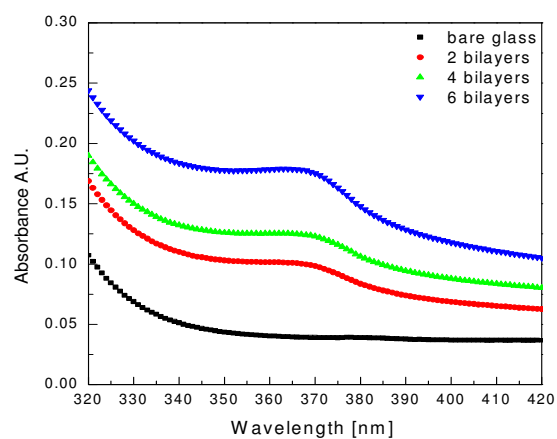
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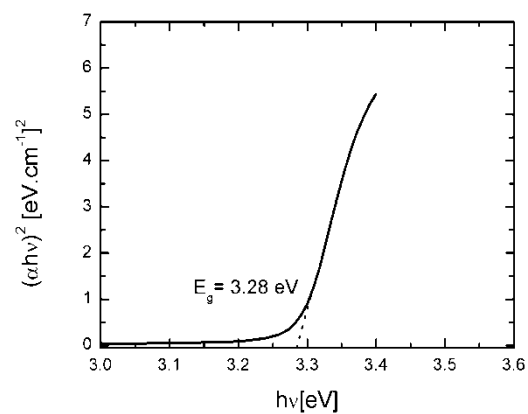
**Figure S1:** SEM image of a 2 bilayers PAH-(PAA-ZnO) thin film on glass substrate using ZnO dispersed in water without a surfactant.



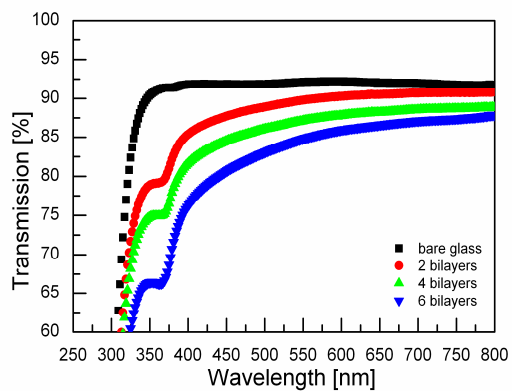
**Figure S2:** UV absorption spectra of the cationic surfactant-stabilized ZnO dispersion, absorption maximum at 361 nm.



**Figure S3:** UV absorbance spectra of PAA/ZnO thin films prepared from a ZnO dispersion without a surfactant, absorbance increases with increasing the number of bilayers.



**Figure S4:** plot of  $(\alpha h\nu)^2$  versus  $(h\nu)$  of the surfactant-stabilized ZnO dispersion yielding the energy band gap ( $E_g$ ) at 3.28 eV.



**Figure S5:** UV-vis transmittance spectra of PAA/ZnO thin films prepared from the ZnO dispersion without a surfactant. Transmittance is damped in the UV region, damping increases with increasing the number of bilayers, however transmittance in the visible region is also damped.