

Enhancement of the piezoelectric response of ZnO nanowires grown by PLI-MOCVD using post-deposition treatments through adjusted screening and surface effects

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Supporting information

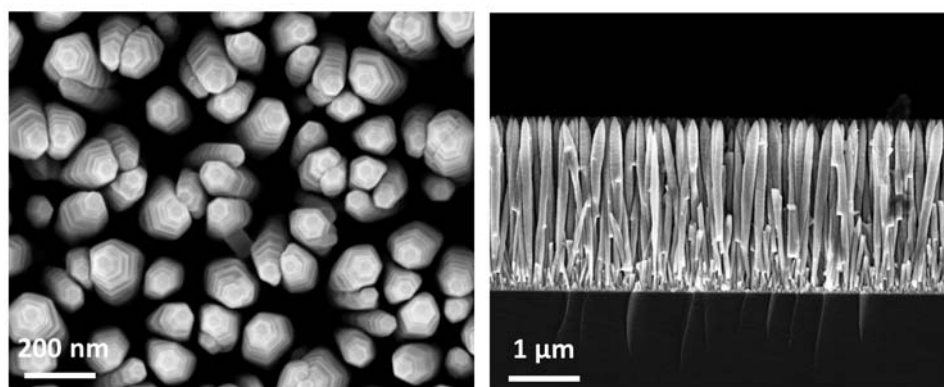


Figure S1. Top-view and side-view FESEM images of ZnO NWs grown by PLI-MOCVD at 700 °C for 30 minutes.

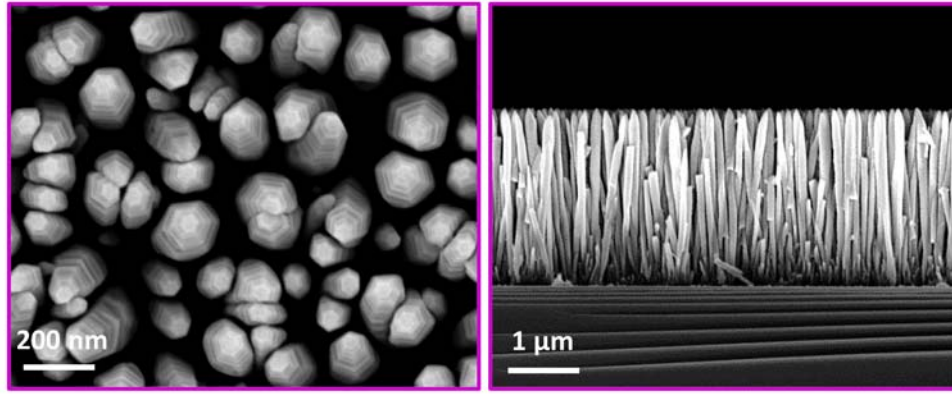


Figure S2. Top-view and side-view FESEM images of ZnO NWs grown by PLI-MOCVD at 700 °C for 30 minutes and treated with O₂ plasma for 30 min.

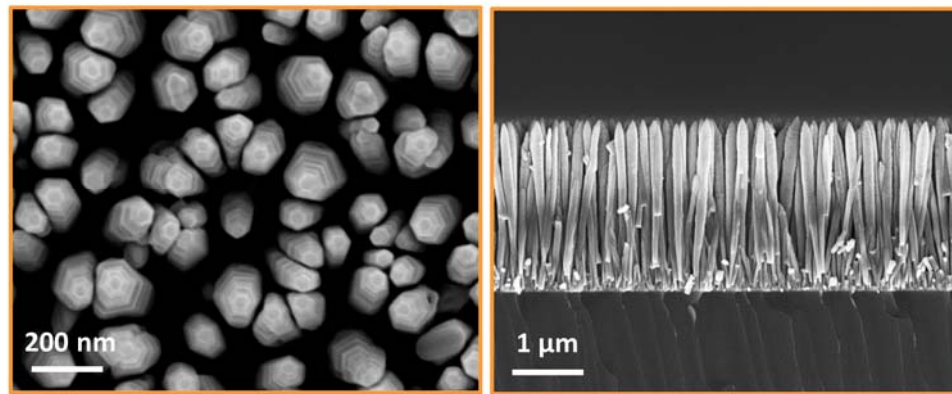


Figure S3. Top-view and side-view FESEM images of ZnO NWs grown by PLI-MOCVD at 700 °C for 30 minutes and treated with UV ozone for 1h.

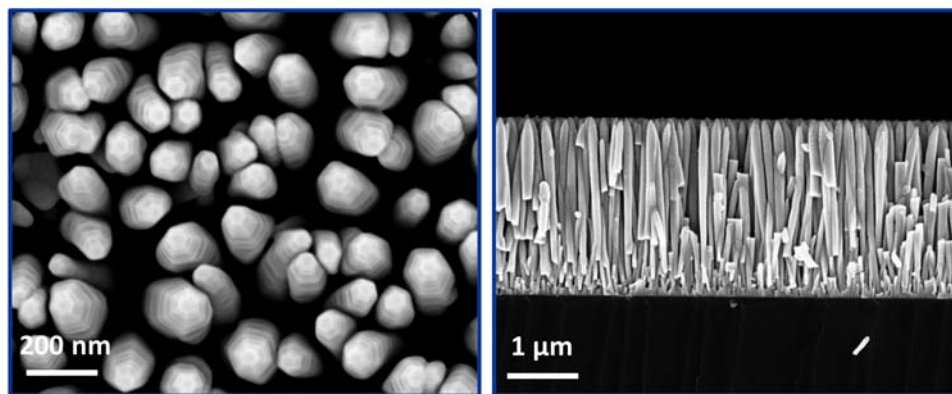


Figure S4. Top-view and side-view FESEM images of ZnO NWs grown by PLI-MOCVD at 700 °C for 30 minutes and treated with thermal annealing at 700 °C for 2h under O₂ atmosphere.

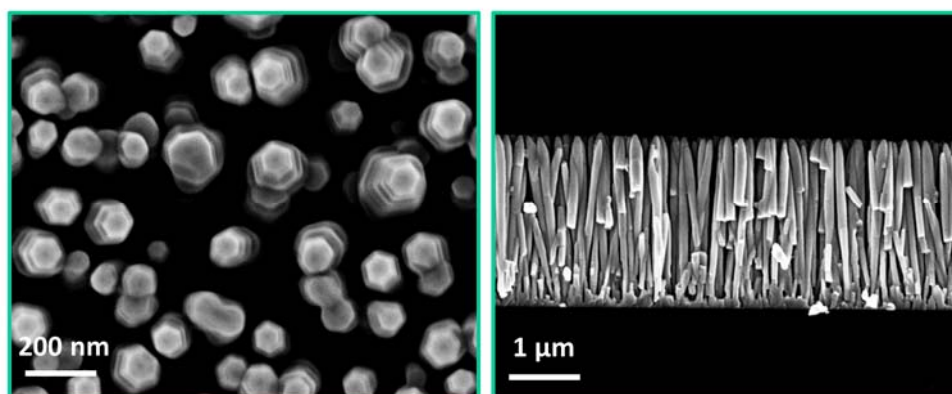


Figure S5. Top-view and side-view FESEM images of ZnO NWs grown by PLI-MOCVD at 700 °C for 30 minutes and treated with thermal annealing at 800 °C for 2h under O₂ atmosphere.

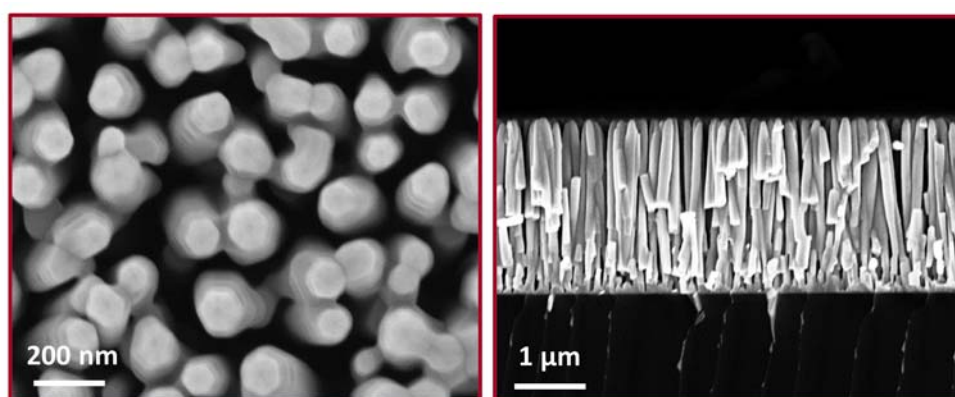


Figure S6. Top-view and side-view FESEM images of ZnO NWs grown by PLI-MOCVD at 700 °C for 30 minutes and treated with thermal annealing at 900 °C for 2h under O₂ atmosphere.

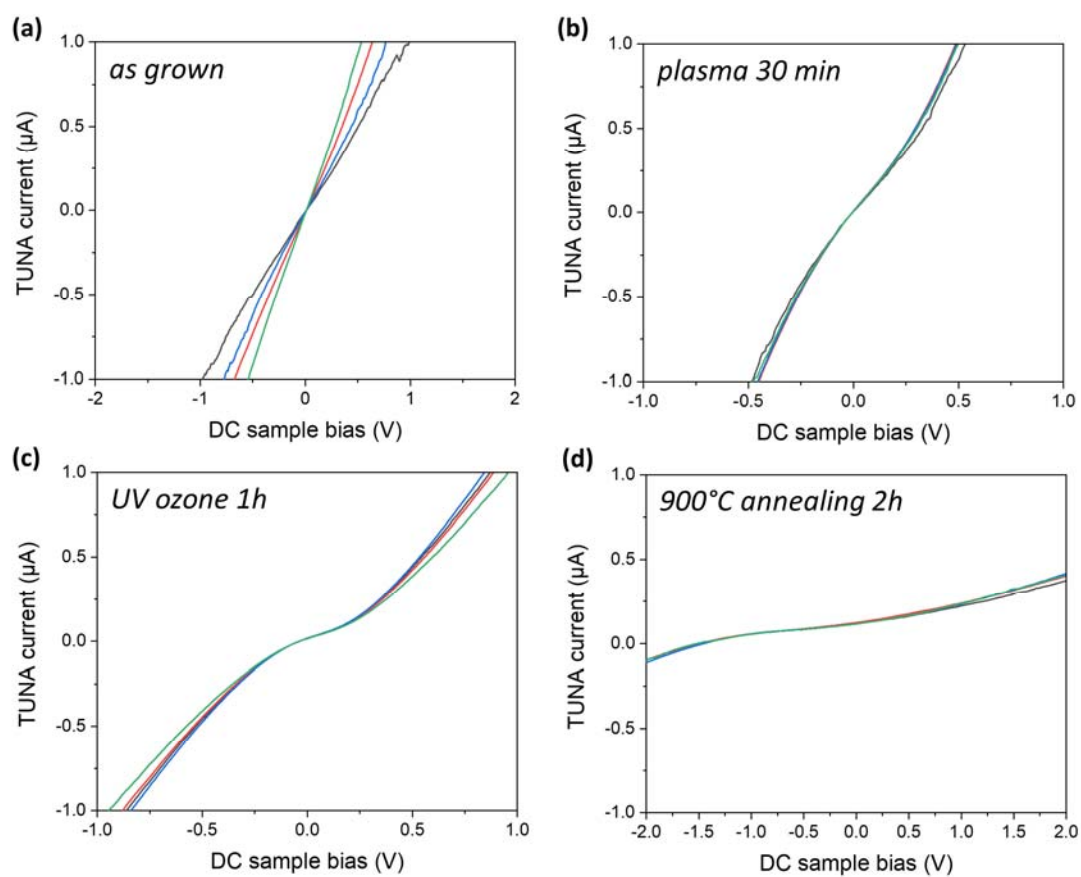


Figure S7. TUNA current (I) as a function of DC sample bias (V) for individual ZnO NWs grown by PLI-MOCVD at 700 °C for 30 min, showing current measurements on 4 different samples for (a) as grown NWs and after (b) plasma for 30 min, (c) UV ozone for 1h and (d) thermal annealing at 900 °C for 2h.

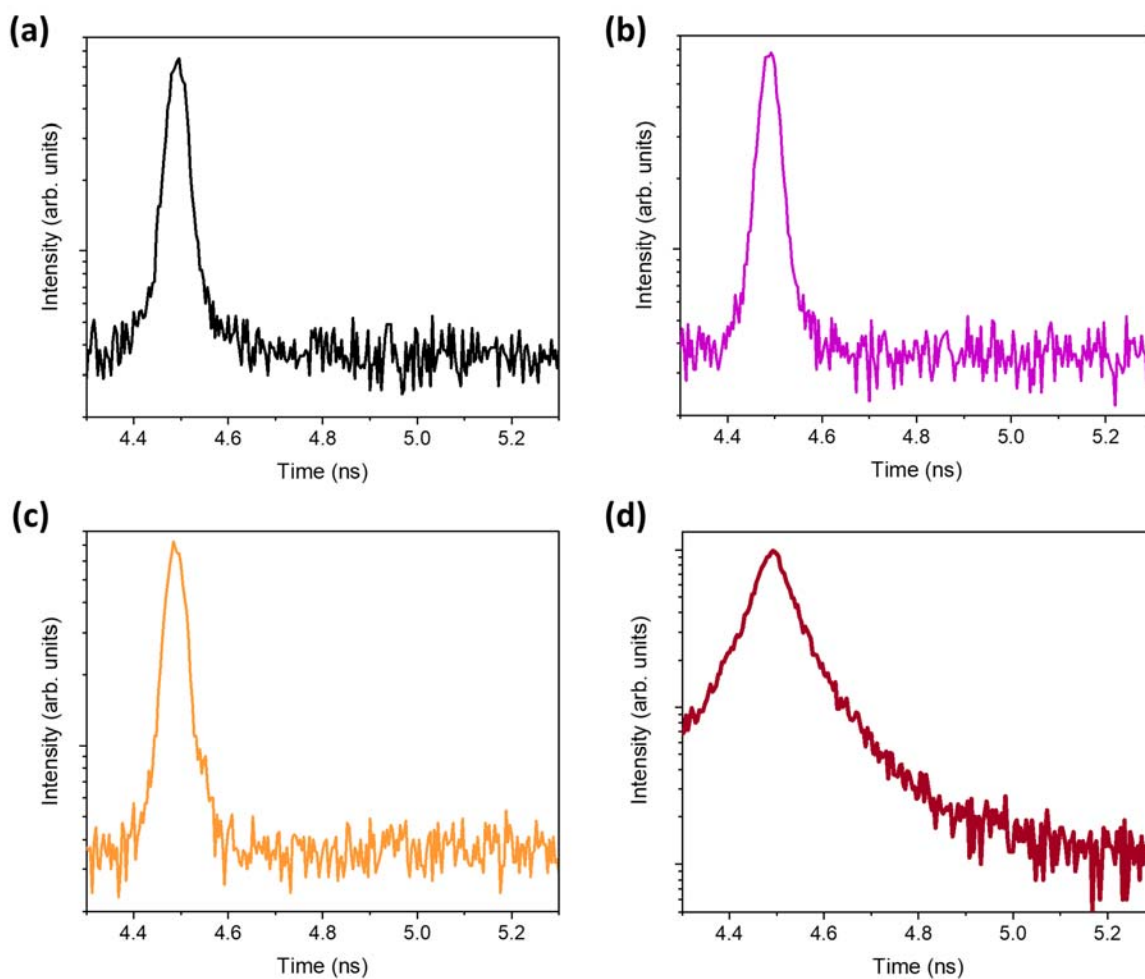


Figure S8. Plot of the CL intensity decrease for ZnO NWs grown by PLI-MOCVD for 30 minutes (a) as grown and treated with (b) O_2 plasma for 30 min, (c) UV ozone for 1h and (d) thermal annealing at 900 °C for 2h.

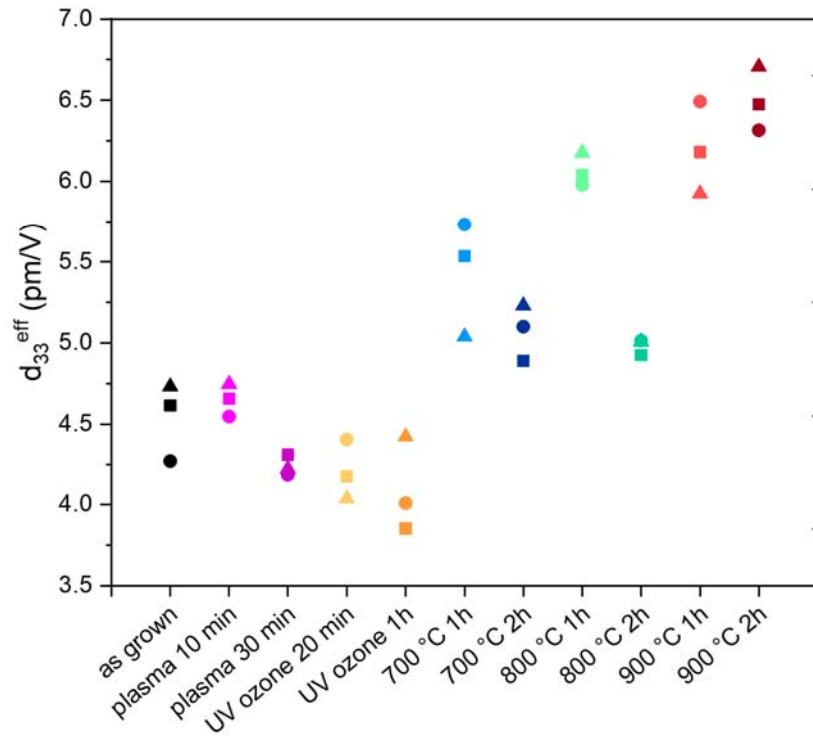


Figure S9. d_{33}^{eff} coefficient from PFM measurements of individual ZnO NWs, collected from 3 different samples before and after post-deposition treatments.