Dynamics of the etching effects on the optoelectronic properties of ZnO nanorods for renewable energy applications

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Abstract:
Zinc oxide (ZnO) is a very promising material for optoelectronic applications, owing to its wide direct band gap (3.4 eV), and a high exciton binding energy (60 meV). ZnO based nanostructures are presently being explored for a wide range of applications in nanolasers, nanogenerators, gas sensors, light emitting diodes, and solar cells. Therefore, large scale, cost efficient, low temperature, controllable synthesis methods to grow variety of ZnO nanostructures are attractive.
In this study we report the preparation of ZnO nanostructures and dynamics of their chemical etching under different concentrations, our method allows the control of the morphology of samples. Thus, the study provides an investigation of the etching time and concentration effects on the electrical and optical properties. Hence, this study exhibits distinct advantages for optoelectronic devices.

Contribution: Oral