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Synthesis of flower-like ZnO thin films by chemical reduction method

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Abstract: Zinc Oxide (ZnO) is a II-VI semiconductor with a wide and direct bandgap of about 3.3 eV which behaves as a transparent conducting oxide. ZnO is a technologically important material exhibiting multifunctional properties for various applications in optoelectronics devices such as solar cells, chemical sensors, piezoelectric transducers, transparent electrodes, photocatalysis, heat mirrors, ultraviolet laser diodes etc. ZnO thin films are prepared on chemically cleaned glass substrates by chemical reduction method. The films are deposited from zinc acetate ($Zn(O_2CCH_3)_2$) and ethylenediamine ($C_2N_2H_8$) of different molarities as source materials at different bath temperatures. Flower-like ZnO nanostructures were synthesized using a low-temperature solution method in the presence of ethylenediaminetetraacetic acid disodium salt (EDTA-2Na). By increasing the EDTA-2Na/Zn^{2+} molar ratio, the morphology transitioned from spherical shaped to

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