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## Effect of milling on the structural, magnetic and catalytic properties of zinc ferrite synthesized by microwave combustion method

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Zinc ferrite nano-crystals were successfully synthesized from its stoichiometric metal nitrates and glycine mixtures, using a microwave assisted combustion method. The as prepared sample was subjected to high energy ball milling for different periods of time. Structural and magnetic properties have been investigated by VSM and Mössbauer spectroscopy. Results revealed that the as-prepared sample is a monophase zinc ferrite possesses high crystallinity. A minor of  $\alpha$ -Fe2O3 phase is detected after milling. The room temperature Mössbauer spectra of the samples are representing the coexistence of both ferrimagnetic ordering and superparamagnetic phases. the data obtained indicate that the Isomer shift falls to the Fe3+ range. The highest average magnetic hyperfine field Bhf was found where the inversion parameter is maxima. The saturation magnetization value of the as prepared ZnFe2O4 is 47 emu/g was observed and its value decreases to 29 emu/g after 330 min of mill.

### **Biography**

Mohamed Housam Mahmoud is an associat Professor, Physics department, Faculty of Science and Arts, Jouf University, Saudi Arabia. Assiut University, Egypt.

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