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Raman spectroscopic studies of monoclinic Gallium Oxide (β -Ga₂O₃) Nanostructures: A comparison between nanowires vs. nanobelts AURANGZEB KHAN, University of Peshawar, Peshawar Pakistan and Department of Physics & Astronomy and CMSS program, Ohio University, Athens OH 45701, SAIMA KHAN, Department of Civil Engineering, Ohio University, Athens OH 45701, WOJCIECH JADWISIENCZAK, School of Electrical Engineering and Computer Science, Ohio University, Athens OH 45701, MARTIN KORDESCH, Department of Physics and Astronomy and CMSS program, Ohio University, Athens OH 45701, OHIO GROUP TEAM, ELECTRICAL ENGG GROUP COLLABO-RATION — Nanostructures of monoclinic gallium oxide (β -Ga₂O₃), nanowires and nanobelts were synthesized via a very simple thermal evaporation process by using Ga metallic ignots and β -Ga₂O₃powder as source materials for gallium and oxygen, respectively. The structural properties of the as grown nanostructures were characterized by using SEM, XRD and EDS. Raman studies were also performed for the grown nanostructures and Raman shifts were compared with the LDA calculated values of the peaks as well as with their bulk counterpart which exhibited good agreements with most of the peaks for both the nanostructures. In addition to this, there are some more Raman shifts which are the characteristics of the nanostructures as they have larger surface to volume ratio compared to their bulk counterparts.

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