

# Abstract

Nanoparticles of samarium-doped nickel oxide were prepared using the solution combustion method, where 2 wt% concentration of Sm was considered to be doped into  $\text{Ni}_x\text{O}_y$  lattice. Phase identification, presence of functional groups, and optical properties of Sm-doped  $\text{Ni}_x\text{O}_y$  were evaluated using X-ray diffraction, Fourier-transform infrared spectroscopy (FTIR), and UV-vis analyses, respectively. During sintering at 280 °C,  $\text{Ni}_2\text{O}_3$ ,  $\text{NiO}$  and  $\text{NaNO}_3$  (as an impurity) phases were developed. The crystallinity of the specimens was increased with an increase in the Sm-concentration. Particle size increased with Sm-concentration. FTIR spectra confirmed the presence of various functional groups and molecules such as Ni-O in the prepared specimens. UV-vis spectroscopy confirmed the formation of required phases. All Samples were tested for antimicrobial activity against E coli (gram negative) bacteria by using well-diffusion method.