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INVESTIGATION OF PHOTOCATALYTIC AND ANTIMICROBIAL PROPERTIES OF BORON DOPED IRON OXIDE NANOSTRUCTURED PARTICLES

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Abstract

Iron oxide and boron doped iron oxide was synthesized by hydrothermal method. XRD and SEM measurements of these nanostructured particles were made and their structural and morphological properties were determined. XRD results are examined and it is seen that all nanostructured particles have Rhombohedral structure. It has been calculated with the Debye-Scherrer formula that these particles are nanostructured. As an application, the photocatalytic and antimicrobial activities of these nanostructured particles have been investigated. Photocatalytic analysis was carried out using ciprofloxacin under the xenon lamp. It has been observed that the photocatalytic degradation rates are high on ciprofloxacin. The antimicrobial activity of the synthesized particles was determined using the Kirby-Bauer Disk Diffusion Method. It has been determined that the boron additive contributes positively to the antimicrobial activity

Key words: antimicrobial, iron oxide, nanostructured, photocatalytic properties

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