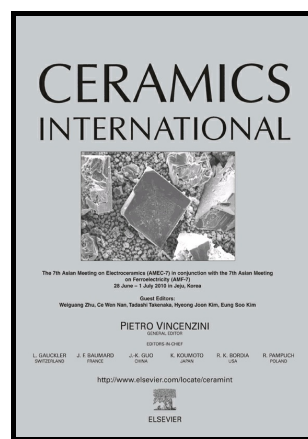


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Comparison of two synthesis methods on the preparation of Fe, N-Co-doped TiO₂ materials for degradation of pharmaceutical compounds under visible light

Aba-Guevara, Cinthia G.¹, Medina-Ramírez, Iliana E.^{1,*}, Hernández-Ramírez, Aracely², Jáuregui-Rincón, Juan³, Lozano-Álvarez Juan Antonio³, Rodríguez-López José Luis⁴.

¹Departamento de Química, Universidad Autónoma de Aguascalientes. Av. Universidad # 940, Ciudad Universitaria, C.P. 20131, Aguascalientes, Ags., México.

²Universidad Autónoma de Nuevo León. Facultad de Ciencias Químicas. Guerrero y Progreso s/n, Col. Treviño. Monterrey, Nuevo León, México. C. P. 65570

³Departamento de Ingeniería Bioquímica, Universidad Autónoma de Aguascalientes. Av. Universidad # 940, Ciudad Universitaria, C.P. 20131, Aguascalientes, Ags., México.

⁴Advanced Materials Department, Instituto Potosino de Investigación Científica y Tecnológica, A.C. Camino Presa Sn José 2055, Lomas 4^a Secc., 78216 San Luis Potosí, SLP, México.

*Correspondence should be addressed to Iliana E. Medina-Ramírez; iemedina@correo.uaa.mx

Abstract

In this work, we report the synthesis, characterization and photocatalytic evaluation of visible light active iron-nitrogen co-doped titanium dioxide (Fe³⁺-TiO_{2-x}N_x) nanostructured catalyst. Fe³⁺-TiO_{2-x}N_x was synthesized using two different chemical approaches: sol-gel (SG) and microwave (MW) methods. The materials were fully characterized using several techniques (SEM, UV-Vis diffuse reflectance DRS, X-ray diffraction XRD, and X-ray photoelectron spectroscopy XPS). The photocatalytic activity of the nanostructured materials synthesized by both methods was evaluated for the degradation of amoxicillin (AMX), streptomycin (STR) and diclofenac (DCF) in aqueous solution. Higher degradation efficiencies were encountered for the materials synthesized by the SG method, for instance, degradation efficiencies values of 58.61 % (SG) and 46.12 % (MW) were observed for

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