

## Hydrodenitrogenation of indol using iridium catalyst supported on titanium nanotubes

Brenda Ledesma<sup>1</sup>, María Laura Martínez<sup>1</sup>, Marcos B Gomez Costa<sup>1</sup>, Andrea Raquel Beltramone<sup>1</sup>

<sup>1</sup>Universidad Tecnológica Nacional, NANOTEC, Argentina.

The HDN of indole was studied over iridium modified titanate nanotube catalyst. Titanium nanotube was prepared by the alkaline hydrothermal method. Iridium was added by wetness impregnation. The activity was compared with Ir-TiO<sub>2</sub> and commercial NiMo/Al<sub>2</sub>O<sub>3</sub> catalysts. The catalysts prepared were characterized by X-ray diffraction (XRD), N<sub>2</sub> adsorption isotherms, UV-Vis-DRS, XPS, TEM, Py-FTIR and H<sub>2</sub>-Chemisorption. XRD, N<sub>2</sub> isotherms and UV-vis-DRS confirmed the nanotube structure. The analysis showed that the mesoporous structure was maintained after Ir incorporation. The results showed that titanate nanotube as support significantly reduce the size of iridium crystallites and improves its dispersion considerably. Iridium titanate nanotube presented abundant and strong Bronsted acidity compared with TiO<sub>2</sub> iridium catalyst. Ir-TNT was the most active catalyst for indole HDN, in mild conditions in a Batch reactor. The Bronsted acidity in synergic effect with Lewis acidity and hydrogenolysis capacity of iridium species were the responsible for the good activity.

**Keywords:** Hydrodenitrogenation, clean fuel, nanotube

**Acknowledgment:**

To FONCyT. PICT 2017-2021 1740 y PICT 2016-1135.

**Presenting author's email:** ledesmabrenda@gmail.com