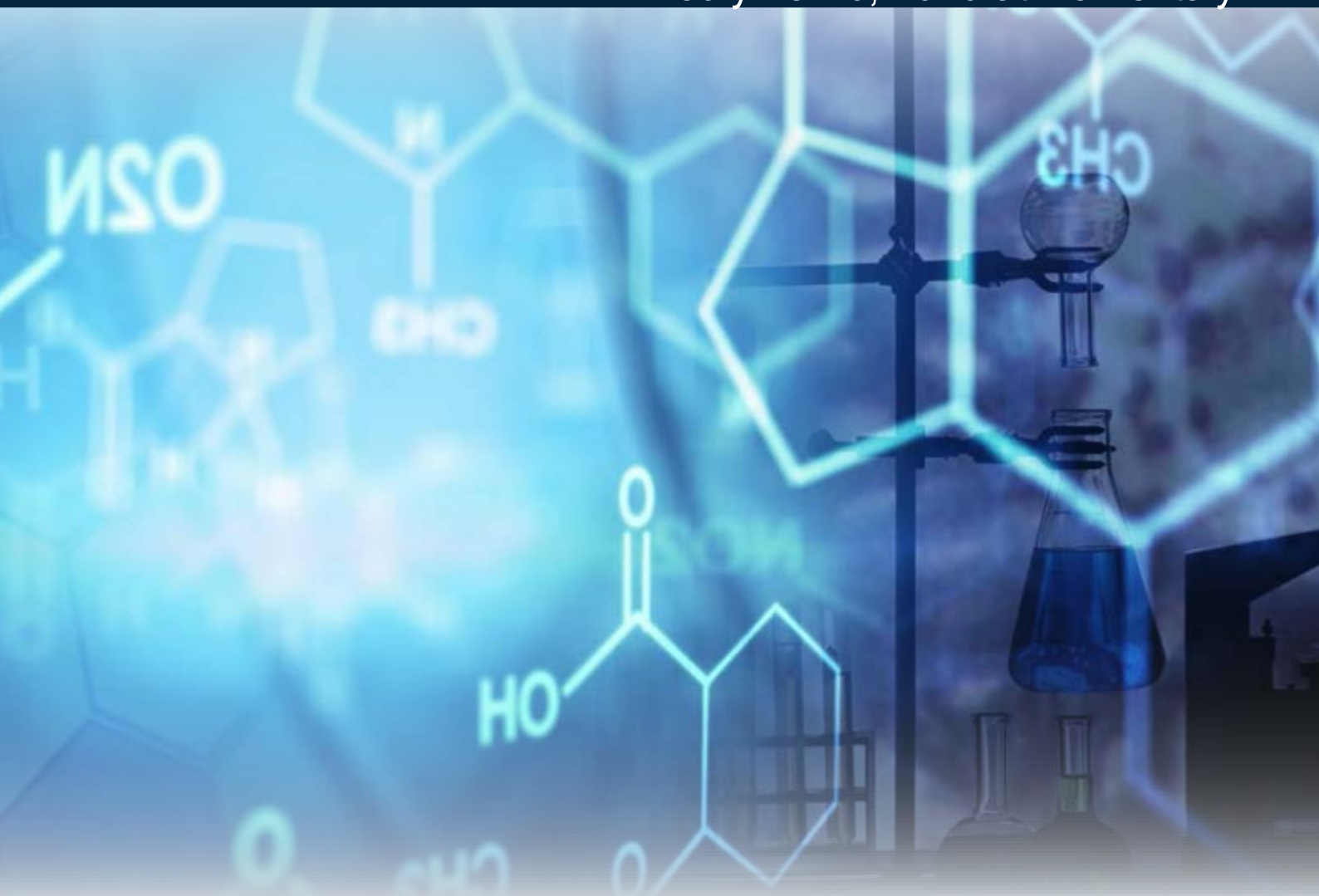


2nd World Congress & Expo on
Chemical Engineering & Catalysis

July 25-26, 2019 at Rome Italy



Scientific Federation

Panjagutta, Hyderabad, Telangana-500082, India

E: contact@scientificfederation.com

<http://scientificfederation.com>



158th Scientific Federation Conference

2nd World Congress & Expo on

Chemical Engineering & Catalysis

July 25-26, 2019 at Rome Italy

Invited Talks (Day 1)

Influence of the Carbon Electrode Properties in the Electrocatalytic Oxygen Reduction Reaction

M. Canal-Rodríguez¹, N. Rey-Raap², M.R.R. Pereira², J.L. Figueiredo², M.A. Montes-Morán¹, J.A. Menéndez¹, **A. Arenillas¹**

¹ Instituto Nacional del Carbón (INCAR-CSIC), Oviedo, Spain.

² Associate Laboratory LSRE-LCM, Departamento de Engenharia Química, Faculdade de Engenharia, Universidade do Porto, Porto, Portugal

A series of carbons with different structure were obtained by polymerization of resorcinol and formaldehyde and subsequent carbonization, activation or graphitization. In addition, nitrogen functionalities and iron particles were also incorporated by applying post-synthesis methods. High purity carbon supports with different micropore volumes and electrical conductivities were obtained due to the thermal treatment applied, while the amount and type of nitrogen incorporated depended to a great extent on the former structure of the carbons. A highly reactive structure enhances the incorporation of superficial nitrogen groups, while the presence of micropores promotes also the addition of quaternary groups. The catalytic activity towards the oxygen reduction reaction (ORR) depends on the physical and chemical properties of the carbons. Microporosity seem to act as catalytic sites, the electrical conductivity improves the limiting current density and the presence of nitrogen functionalities shifts the mechanism of the reaction to the four electrons pathway. The introduction of iron into the samples leads to catalytic materials with a notably improved performance in ORR, with results very close to that of a platinum-based reference material.

Biography

Ana Arenillas graduated from University of Oviedo, Spain, where received his M.Sc. in Chemistry and Ph.D. in Chemical Engineering in 1994 and 1999, respectively. She joined INCAR-CSIC in 1995 where she has been working since then, with different stays in Leeds University (UK) between 1995-1997 and Nottingham University (UK) between 2003-2004. Her research activity is mainly focused in carbon materials and their use in Energy and Environmental issues, besides the use of microwave heating applied to carbon-related technological processes. She leads various research projects on these fields. She is co-author of more than 200 scientific publications, book chapters and patents. Cofounder of Xerolutions Ltd.