MINISTERIO DE CIENCIA E INNOVACIÓN

CURRICULUM VITAE (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

CV date	18/01/23

Part A. PERSONAL INFORMATION

First name	Rosa		
Family name	Menéndez López		
Gender (*)	Female	Birth date (dd/mm/yyyy)	12/02/56
Social Security, Passport, ID number	11379162G		
e-mail	rosmenen@incar.csic.es	URL Web	
Open Researcher and Contributor ID (ORCID) (*)		0000-0002-3972-9419	

A.1. Current position

Position	OPIs Research Professor		
Initial date	2003		
Institution	Agencia Estatal Consejo Superior de Investigaciones Científicas		
Department/Center	Science and Technology of Materials	Institute of Carbon Science and Technology CSIC	
Country	Spain	Teleph. number	660072878
Key words	Carbon materials, Graphene, preparation, environmental aplications		

A.2. Previous positions (research activity interruptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
2017-2022	CSIC President

A.3. Education

MChem- Equivalent	University of Oviedo	1980
PhD in Chemistry	University of Oviedo	1986

Part B. CV SUMMARY

After achieving my degree in Chemistry at Oviedo University (Spain) in 1980, I granted with several pre-doctoral scholarships in the Instituto Nacional del Carbón (INCAR-CSIC), obtaining the PhD degree in Chemistry at Oviedo University in 1986. I began my career at CSIC as tenure scientist in 1988, and promoted to research scientist in 2000. Since 2003, I am full research professor at INCAR-CSIC where I set up the Composites Group in the nineties. I have also been on research stays in several foreign institutions: School of Environmental and Mining Engineering (Nottingham-UK), Imperial College (London-UK), Clemson University (South Carolina-USA), Southern Illinois University (Carbondale-USA) and the Northern Carbon Research Laboratories (Newcastle upon Tyne -UK).

Simultaneously to my research career, I have actively participated in **science organization and management**. From 2003 to 2008 I was **Director of INCAR**. In the period 2017-2022, I took the position of **President of the Spanish National Research Council (CSIC)**, it requiring a full dedication which supposed an interval of time out of the research activity. This was my third time in CSIC senior positions since I have also been Vice-President for Scientific and Technical Research (2008-2009) and institutional representative in the Principality of Asturias (2009-2017).

In parallel, I have been actively involved in the **design and assessment of different activities for the European Union**, as member of the High-Level Group of the Governance of the European Research

Area (ERA) as well as of the Technical and Exploitation Advisory Committee of DECARBit project and the Coal and Steel Programme Committee (TGC2). I was also chair and co-chair of the Experts Committees for the review of the Non-Nuclear Energy Programme and participated as evaluator of proposals submitted to FP5, FP6 and FP7 calls. Additionally, I has been Vice-President of Science Europe, President of the European Carbon Association (ECA), member of the Advisory Board of the multinational SASOL, President of the Spanish Carbon Group, responsible for the operation of the Programme of Materials and Energy included within the Spanish National Plan of Research, Development and Innovation, member of the Scientific Advisory Committee of Industrial Química del Nalón SA, member of the International Committee on Coal and Organic Petrology, member of the Spanish Technical Committee of Standardisation (AENOR), member of the National Evaluation Commission of Research Activity (CNEAI) and of the Governing Council of the Spanish National Agency of Research.

Focusing on my **research activity**, I have participated in more than 30 research projects, being the principal investigator for 23 projects, 9 of them of the European Union R&I Framework Programme and Research Fund for Coal & Steel (4 as coordinator), most of them with the participation of industrial partners. Likewise, I have published more than 220 papers in high impact international journals. I am co-inventor of 10 patents and supervisor of 20 PhD theses and 22 MSc in the fields of Materials and Chemistry. My main interest focuses on the synthesis of carbon precursors from coal and petroleum derivatives and the design and control of the processing conditions for obtaining materials with tailored properties. From the wide knowledge acquired, I have led my scientific activity, since 2010, to the synthesis of graphene materials for different applications. This research was initially performed with the support of the CONSOLIDER Ingenio 2010 Program (Project MULTICAT) aiming to design catalysts with molecular recognition capability for application in the energy field, chemical processes and environmental science. It was followed by a second project from the National Materials Program (MAT2010-16194) and an industrial project (INNPACTO). REPSOL also gave its full support through a project (SAVE, INSPIRE Program) for the optimization of graphene production from petroleum derivatives and the development of new high-efficiency energy storage systems for electrical cars. A bilateral project (I-LINK Program, Ref 0459) with USA supported by CSIC focused on energy applications, and finally, a European project within the RFCS Program (RFC-PR-12008) aimed at the preparation of graphene-based composites from coal derivatives for electronics. In the field of biomedical applications (including sensors) I led two projects with participation of companies such as Dropsens SL, Instituto Oftalmológico Fernández-Vega and Industrial Química del Nalón SA.

Main achievements of this work include:

- **Optimization of the preparation of graphene oxide** and **graphene** (yield and quality) by a **novel top-down methodology**
- **Control of the graphene sheets size**
- **Production of tuned graphene materials** by **thermal exfoliation/reduction** procedure
- **Scaling all processes**
- **Successful testing of graphene materials performance** in several applications

Part C. RELEVANT MERITS

C.1 Publications

- J. Nieto, M.V. Jimenez, P. Alvarez, A.M. Perez-Mas, Z. Gonzalez, R. Pereira, B. Sanchez-Page, J.J. Perez-Torrente, J. Blasco, G. Subias, M. Blanco, R. Menéndez, 2019, ***Enhanced Chemical and Electrochemical Water Oxidation Catalytic Activity by Hybrid Carbon Nanotube-Based Iridium Catalysts Having Sulfonate-Functionalized NHC ligands,*** ACS Applied Energy Materials, 2: 3283-3296.

- R. Sanchez-Hidalgo, C. Blanco, R. Menéndez, R. Verdejo, M.A. Lopez-Manchado, 2019***, Multifunctional Silicone Rubber Nanocomposites by Controlling the Structure and Morphology of Graphene Material,*** Polymers, 11: 449-462.

- I. Llorente, O. Caballero-Calero, Z. González, R. Menéndez, M.L. Escudero, M.C. Garcia-Alonso, A. Garcia-Argumanez, 2019, ***Electrochemical reduction of graphene oxide on biomedical grade CoCr alloy***, Applied Surface Science, 465: 1028-1036.

- S. Cortijo-Campos, L. Álvarez-Fraga, G. Goncalves, M. Vila, P. Álvarez, R. Menéndez, A. de Andrés, C. Prieto, 2019**, *In-situ carboxylation of graphene by chemical vapor deposition growth for biosensing,*** CARBON, 141:719-727.

- R. Sánchez-Hidalgo, V. Yuste-Sánchez, R. Verdejo, C. Blanco, M.A. López-Manchado, R. Menéndez, 2018**, *Main structural features of graphene materials controlling the transport properties of epoxy resin-based composites,*** European Polymer Journal, 101: 56-65.

- P. Wiench, Z. González, R. Menéndez, B. Grzyb, G. Gryglewicz , 2018**, *Beneficial impact of oxygen on the electrochemical performance of dopamine sensors based on N-doped reduced graphene oxides,*** Sensors and Actuators B-Chemical, 257: 143-153.

- Z. González, C. Flox, C. Blanco, M. Granda, J.R. Morante, R. Menéndez, R. Santamaría, 2017, ***Outstanding electrochemical performance of a graphene-modified graphite felt for vanadium redox flow battery application,*** Journal of Power Sources, 338: 155-162.

- U. Sierra, P. Álvarez, C. Blanco, M. Granda, R. Santamaría, R. Menéndez, 2016, ***Cokes of different origins as precursors of graphene oxide***, FUEL, 166: 400-403.

- P. Álvarez, C. Blanco, R. Santamaría, P. Blanco, Z. González, L. Fernández-García, U. Sierra, M. Granda, A. Páez, R. Menéndez, 2015, ***Tuning graphene properties by a multi-step thermal reduction process***, CARBON, 90: 160-163.

- A.S. Calvo, C. Botas, D. Martin-Yerga, P. Álvarez, R. Menéndez, A. Costa-García, 2015, ***Comparative study of screen-printed electrodes modified with graphene oxides reduced by a constant current***, Journal of the Electrochemical Society, 162: B282-B290.

C.2. Conferences

I have participated in a large number of national and international conferences with oral and poster communications, being most of them published as proceedings or extended abstracts. I have acted as chair session in several of them (i.e. 5th International Conference on Coal Science, Tokyo, Japón, 1989; Journées du Groupe Chimie des Materiaux Carbonés, Metz, Francia, 1990; International Carbon Conference, Granada, España, 1994; 23rd Biennial Conference on Carbon, PennState, EEUU, 1997; 25th Biennial Conference on Carbon, Charleston, EEUU, 1999). Also, as invited plenary lecturer (i.e. 14th Japan-China-Korea Joint Symposium on Carbon Saves the Earth CS2016, Miyazaki, Japón; International Carbon Conference, Madrid, 2018).

C.3. Research projects

The most relevant projects, in the thematic of current proposal, in which I have participated are:

- RFCR-CT-2015-00006, ***Coal-liquid based upgraded carbon materials for energy storage***, EU Research Fund for Coal and Steel, Participants: INCAR-CSIC, Industrial Química del Nalón IQNSA,Wrockaw University of Technology, Politechnica University from Bucharest, University of East Anglia, Claudiu TopRom Srl, PI at INCAR: Marcos Granda, 2015-2018, 296.746 €, **Coordinator: Rosa Menéndez up to 17/11/17,** from that Marcos Granda**.**

- MAT2013-48107-C3-1-R, ***Producción de grafenos de distintas características a través de óxido de grafito para nanocomposites de base polimérica***, MINECO, 2014-2016. Participants: INCAR-CSIC, University of Oviedo, ICTP-CSIC, 142.857 €. **PI: Rosa Menéndez.**

- RFCR-CT-2013-00006, ***Coal liquid-based high crystalline carbons for the synthesis of graphene-based composites***, UE - Research Fund for Coal and Steel, Participants: INCAR-CSIC, 2013-2016, 297.699 €. Coordinator: Marcos Granda. Rosa Menéndez participated as researcher.

- Ref. 20157311, ***Implantes oculares personalizados y sensores a partir de grafeno y nanopartículas para aplicaciones biomédicas (GRAPH-EYES***), IDEPA – Proyectos tractores de I+D, 2011-2014,

Participants: INCAR-CSIC, IQNSA, DROPSENS, IOFV, CINN, Prodintec, Universidad de Oviedo, Coordinator: IQNSA, 2014-2015, 55.000 €. **PI at INCAR-CSIC: Rosa Menéndez**

- ***Sistemas de almacenamiento de energía con grafenos para vehículos eléctricos (SAVE),*** REPSOL., 2013-2015, Participants: INCAR-CSIC, Repsol, ICCM-CSIC, Universidad Politécnica de Madrid, Universidad de Córdoba Project Coordinator: Fernando Calle (UPM), **PI at INCAR-CSIC: Rosa Menéndez.**
- IPT-2011-0951-390000, ***Tecnología de imagen de banda submilimétrica/terahercios basada en grafeno para sistemas de seguridad (TECNIGRAF),*** MICINN-IMPACTO, SIC, 2011-2014, 146.391. PI: Patricia Alvarez.
- MAT2010-16194, ***Desarrollo de materiales grafeno/TiO_2 para un uso más eficiente de la luz solar en reacciones de fotocatálisis oxidativa,*** MICINN - Plan Nacional de Materiales, 2011-2013, 82.280 €. PI: Patricia Álvarez
- CSD2009-00050, ***Desarrollo de catalizadores más eficientes para el diseño de procesos químicos sostenibles y producción limpia de energía***, MICINN – CONSOLIDER, 2009-2014, 269.731 €. Participants: INCAR-CSIC, IREC, ITQ-UPV-CSIC, UniZar, IQOG-CSIC, ICTP-CSIC, UCLM, Coordinator: A. Corma (ITQ-UPV-CSIC), **PI at INCAR: Rosa Menéndez**.

C.4. Contracts, technological or transfer merits

I have been involved in **more than 50 contracts and 200 hundred technical reports** in collaboration with different industrial companies for different sectors including carbochemical, petrochemical, mining, metallurgical, energy, medical, environment and aeronautics. These were related to quality control of supplies, products improvement, optimization of operational conditions and development of new materials. The most representative ones are:

- ***Preparación y caracterización de grafenos y derivados para biosensores***. Funding body: DropSens SL (2014-2016)
- ***Preparación y caracterización de grafenos y derivados con propiedades que se adecúen a aplicaciones biomédicas,*** Funding body: Industrial Química del Nalón (2014-2016)
- ***Modificación de lubricantes con grafeno,*** Funding body: ACCIONA AGUA (2014-2015)

Moreover, I listed as author in **several patents**, being the most relevant:

- R. Menéndez, P. Álvarez, U. Sierra, C. Blanco, M. Granda, R. Santamaría; PCT/ES2014/070178; ***Método de obtención de óxido de material pregrafítico, óxido de grafeno o grafeno a partir de materiales pregrafíticos y productos obtenidos por dicho método;*** Spain; 2014; Patent owner: CSIC.
- A. Páez, J. García, P. Álvarez, M. Granda, C. Blanco, R. Santamaría, P. Blanco, L. Fernández, R. Menéndez, F. Calle; EP14382352.4; ***Method for producing graphene with tunable properties by a multi-step thermal reduction process;*** Spain; 2014; Patent owner: REPSOL, S.A.

In addition, I participated in the **creation of a technology-based company**:

- ***GrafenAstur, S.L***. Founding partners: R. Menéndez, M. Granda, R. Santamaría, C. Blanco, P. Álvarez, C. González, M. Gutiérrez-Estampa. Registered office: C/Santa Susana Nº 1 entresuelo B (Oviedo). Constitution Date: 31/03/2015. NIF: B-74388802. Commercial Register: tomo 4136; hoja AS-48233, inscripción 1ª, folio 206, libro 0. Purpose of the company: fabrication of graphene materials.