

Prof. Javier Garcia Martinez

Molecular Nanotechnology Lab, Director | Rive Technology, Founder and Chief Scientist
Department of Inorganic Chemistry, University of Alicante, E-03690, Alicante, Spain
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Director of the Molecular Nanotechnology Lab and Chemistry Professor, University of Alicante 2009 –
Leads one of the most important research centers on molecular nanotechnology and on its application to catalysis and energy technologies. Founded this award-winning research center, hired its staff and scientists, and secured international collaborations, and multimillion funding. Teaches at undergraduate and graduate levels. Created several courses on materials chemistry and nanotechnology. Prolific author and speaker on nanotechnology, energy and advanced materials.

Co-founder, Chief Scientist, Rive Technology, Inc., 2006 –
Invented the core technology, transferred it from MIT, co-founded the company, secured intellectual property, and devolved over ten patents. Helped to raise \$67M and hire over 40 employees. Marketed and sold novel catalysts to energy companies. Secured partnership with W.R. Grace to manufacture its first commercial product and the extension of the technology to a wide range of applications in collaboration with leading companies of the sector. Supervises and advice on the technical progress of the company.

EDUCATION

Fulbright Post-doctoral Fellow , Massachusetts Institute of Technology <i>"Nanocomposite processing of novel catalytic materials and transition metal oxide molecular sieves"</i> Supervisor Dr. J. Y. Lin	2001 – 2003
Ph.D. Chemistry , Summa Cum Laude, University of Alicante <i>"Synthesis and Characterization of Zeolites and Zeolite/Carbon Composites. Application in SO₂ Removal"</i> Summa Cum Laude, Supervisor, Dr. Linares and Dr. Cazorla	2000
Master of Science , Summa Cum Laude, University of Alicante	1998
B. Sc. Major: Chemistry , University of Alicante	1996

VISITING SCHOLAR

Oxford University , Oxford Martin Visiting Fellow	2015
Princeton University , Keller Center, Visiting Scholar	June – Sept., 2010-2015
Yale University , Executive Education Program	2012
Harvard University , Executive Education Program	2010
Royal Institution of Great Britain , 3 months Ph. D. stay, Prof. G. Sankar	1999
University of California at Berkeley , 3 months Ph. D. stay, Prof. E. Iglesia	1998
California Institute of Technology , 3 months Ph. D. stay, Prof. Mark E. Davis	1997

SERVICE IN INTERNATIONAL ORGANIZATIONS

International Union for Pure and Applied Chemistry, Member of the Bureau, 2011 – ; Inorganic Chemistry Division 2006 – ; Materials Chemistry Subcommittee, 2006 – 2014

Decide on strategic planning, financing and relationships with other scientific organizations.

Coordinate and manage international initiatives on scientific research and educational programs

World Economic Forum, Vice-chair 2011, Emerging Technologies Council; Global Agenda Council, 2010 –

Provide advice to Governments and business leaders on innovation, energy, and entrepreneurship.

Participate in several studies and reports and in international panels including the Davos Annual Summit.

AWARDS

Rey Jaime I Award, 2014 | Liderazgo Joven Award, Fundacion Rafael del Pino, 2014 | Member, Global Young Academy, 2012 | INNOVADORES Award, Spain 2012 | IMPORTANTE Award, 2011 | Fellow, Royal Society of Chemistry, 2011 | Round Table of Top Entrepreneurs, EIT, 2010 | Young Global Leader, World Economic Forum, 2009 | TR35 Innovator of the Year, Technology Review, MIT, 2007 | European Young Chemist Award, EuCheMS 2006 | Europa Medal. Europe's Top Younger Chemical Researcher, 2005 | Science Outreach

“Teresa Pinillos” Award, Spain, 2004 | Ramón y Cajal Award, Ministry of Education, Spain, 2003 | Fulbright Postdoctoral Fellowship, 2001-2003

BOOKS

E. Li, **J. Garcia Martinez**, (ed.) *Mesoporous Zeolites: Preparation, Characterization and Applications*. WILEY-VCH (2014)

E. Serrano Torregrosa, **J. Garcia Martinez**, *Chemistry Education: Best Practices, Opportunities and Trends*, WILEY-VCH (2014)

J. Garcia Martinez, *Nanotechnology for the Energy Challenge*, 2nd Edition, WILEY-VCH (2013)

E. Serrano Torregrosa, **J. Garcia Martinez**, *The Chemical Element: Chemistry's Contributions to our Global Challenges*, WILEY-VCH (2011)

J. Garcia Martinez, *Nanotechnology for the Energy Challenge*, WILEY-VCH(2010)

RECENT PUBLICACIONES

T. Prasomsri, W. Jiao, S. Z. Weng, **Javier Garcia-Martinez**, *Mesostructured zeolites: bridging the gap between zeolites and MCM-41*, Chem Commun, 10.1039/C4CC10391B (2015)

M. Ojeda, A. Grau-Atienza, R. Campos, A. A. Romero, E. Serrano, J. M. Marinas, **J. García-Martínez**, R. Luque, *Hierarchical Zeolites and their Catalytic Performance in Selective Oxidative Processes*, ChemSusChem 8(8) 1328-1333

A. Grau, A. Baeza, E. Serrano, **J. Garcia-Martinez**, C. Najera, *Mesoporous Metal Complex–Silica Aerogels for Environmentally Friendly Amination of Allylic Alcohols*, ChemCatChem 7 (1), 87-93 (2015)

M. Rico-Santacruz, A. E. Sepúlveda, E. Serrano, E. Lalinde, J. R. Berenguer, **J. Garcia-Martinez** *Organotitanias: A versatile approach for band gap reduction in titania based materials*, J. Mater. Chem. C,2, 9497-9504 (2014)

J. Garcia-Martinez, C. Xiao, K. A Cychosz, K. Li, W. Wan, X. Zou, M. Thommes, *Evidence of Intracrystalline Mesostructured Porosity in Zeolites by Advanced Gas Sorption, Electron Tomography and Rotation Electron Diffraction*, ChemCatChem, 6(11), 3110–3115 (2014)

N. Linares, A. M. Silvestre-Albero, E. Serrano, J. Silvestre-Albero, **J Garcia-Martinez**, *Mesoporous materials for clean energy technologies*, Chem Soc Rev, 43, 7681-7717 (2014)

A. Grau-Atienza, R. Campos, E. Serrano, M. Ojeda, A. A. Romero, **J. Garcia-Martinez**, R. Luque, *Insights on the active species of nanoparticle-functionalised hierarchical zeolites in alkylation reactions*, ChemCatChem, 6(12), 3530–3539, (2014)

K. Li, J. Valla, **J. Garcia-Martinez**, *Realizing the Commercial Potential of Hierarchical Zeolites: New Opportunities in Catalytic Cracking*, ChemCatChem 6 (1), 46-66 (2014)

N. Linares, C.P. Canlas, **J. Gacia Martinez**, T. Pinnavaia, *Colloidal gold immobilized on mesoporous silica as a highly active and selective catalyst for styrene epoxidation with H₂O₂*, Catal. Commun. 44 (1) 50-53 (2014)

A. Rico, A. Silvestre, J. Silvestre, **J. Garcia Martinez**, *Desilication of TS-1 zeolite for the oxidation of bulky molecules*, Catal. Commun. 44, 35-39 (2014)

J. M. Bermudez, J. A. Menendez, A. A. Romero, E. Serrano, **J. Garcia Martinez**, R. Luque, *Continuous flow nanocatalysis: reaction pathways in the conversion of levulinic acid to valuable chemicals*, Green Chem. 15, 2786-2792 (2013)

R. Luque, **J. Garcia-Martinez**, *From Mesoporous Supports to Mesoporous Catalysts: Introducing Functionality to Mesoporous Materials*, Chem. Cat. Chem. 5(4), 827 – 829 (2013)

E. Serrano, N. Linares, J.R. Berenguer, **J. Garcia-Martinez**, *Sol-Gel Coordination Chemistry: Building Catalysts from the Bottom-up*, Chem. Cat. Chem. 5(4) 844–860 (2013)

S. R. Batten, N.R. Champness, X-M Chen, **J. Garcia Martinez**, S. Kitagawa, L. Öhrström, M. O'Keeffe, M. Suh, J. Reedijk, *Terminology of Metal-Organic Frameworks and Coordination Polymers*, Pure and Appl. Chem., 85(8), 1715–1724 (2013)

J. Garcia Martinez, R. Luque, *Functional Porous Materials*, ChemCatChem 5(4), 825–1031 (2013)

N. Linares, E. Serrano, A.I. Carrillo, **J. Garcia Martinez**, *Metal-Complex Ionosilicas: Cationic Mesoporous Silica with Ni(II) and Cu(II) Complexes in Their Framework*, Mater. Lett. (95) 93-96 (2013)

A.I. Carrillo, E. Serrano, R. Luque, **J. Garcia Martinez**, *Microwave-Assisted Catalysis by Iron Oxide on MCM-41 Type Materials: Effect of the Support Morphology*, Appl. Cat. A - Gen. (453) 383-390 (2013)

M. Rico, A.E. Sepúlveda, S. Ruiz, E. Serrano, J.R. Berenguer, E. Lalinde, **J. Garcia Martinez**, *A Stable Luminescent Hybrid Mesoporous Cooper Complex-Silica*, Chem. Commun. (48) 8883–8885 (2012)
S. R. Batten, N. R. Champness, X. M. Chen, **J. Garcia Martinez**, S. Kitagawa, L. Öhrström, M. O'Keeffe, M. P. Suh, J. Reedijk, *Coordination polymers, metal–organic frameworks and the need for terminology guidelines*, CrystEngComm 14 (9), 3001-3004 (2012)
J. Garcia Martinez, K. Li, G. Krishnaiah, *A Mesostructured Y Zeolite as a Superior Catalyst- From Lab to Refinery*. Chem. Commun. (48) 11841-11843 (2012)
J. Garcia Martinez, M. Johnson, J. Valla, K. Li, J.Y. Ying, *Mesostructured zeolite Y—high hydrothermal stability and superior FCC catalytic performance*, Catal. Sci. Technol. (2) 987-994 (2012)

SELECTED PATENTS

J. Garcia Martinez, *Mesoporous zeolite catalyst supports*, US 20140128246 A1 (2014)
J. Garcia Martinez, L. Dight, B. Speronello, *Methods for enhancing the mesoporosity of zeolite-containing materials*, US 8685875 B2 (2014)
K. Li, **J. Garcia Martinez**, M. Beaver, *Introduction of mesoporosity into low silica zeolites*, WO 2013106816 A1 (2014)
K. Li, **J. Garcia Martinez**, *Introducing mesoporosity in the presence of neutral surfactant*, US61/586,476 (2013)
L. Dight, **J. Garcia Martinez**, I. Valla, M. Johnson, *Compositions and methods for improving the hydrothermal stability of mesostructured zeolites by rare earth ion exchange*, US 8524625 B2 (2013)
J. Y. Ying, **J. Garcia Martinez**, *Mesostructured Zeolitic Materials, and Methods of Making and Using the Same*, Chinese Patent, WO2006/038912 (2012)
J. Garcia Martinez, M. Johnson Marvin, *Methods of Recovery of Pore-Forming Agents for Mesostructured Materials*, US Patent, US8,206,498 (2012)
J. Garcia Martinez, M. Johnson, I. Valla, *Mesoporous framework-modified zeolites*, US Patent, 13/440,781 (2012)
J. Garcia Martinez, M. Johnson, I. Valla, *Caustic healing of composition having enhanced mesoporosity*, US Patent, 61/586,457 (2012)
J. Garcia Martinez, M. Johnson, I. Valla, *High temperature preserving of ZSM-5*, US Patent, 61/479,933 (2011)
J. Garcia Martinez, E. Senderov, B. Speronello, *Incorporation of mesoporosity in low Si/Al zeolites by desilication*, US Patent, US61/473,588 (2011)
J. Garcia Martinez, E. Senderov, M. Johnson, *Stabilization of mesopore structure in rived zeolites*, US Patent, 12/986,805 (2011)
J. Garcia Martinez, L. Dight, B., Speronello, *Riving of zeolite containing catalyst*, US Patent 12/907,643 (2011)

ORGANIZATION OF SCIENTIFIC CONFERENCES AND SYMPOSIA

International Symposium on Mesoporous Zeolites, Boston, MA, 2015 | International Conference on New Materials for Clean Energy Processes, Alicante, 2015 | International Symposium on Mesoporous Zeolites, San Francisco, CA, 2014 | Shape Europe, World Economic Forum, Madrid, 2013 | I International Symposium on Mesoporous Zeolites, Indiana, IN, 2013 | Nanotechnology for Energy Applications, University of Palermo, 2012 | Trends in Inorganic Chemistry, Stockholm University, 2012 | Education in Chemistry through On-line Communities, Rome, 2012 | Advanced Nanomaterials for Energy Applications, Puerto Rico, 2011 | Chemistry's Contribution to our Global Future, Puerto Rico, 2011 | Nanotechnology: Challenges and Opportunities, Universidad de Alicante, 2011

INVITED TALKS

Presidential invitation, ACS National Meeting, Boston, 2015 | Oxford University, Oxford Martin School, 2015 | World Economic Forum, Dead Sea, Jordan | Opening of the Science Week, Barcelona, Spain | Stanford University, Palo Alto, 2014 | Chinese Academy of Sciences, Beijing, China, 2014 | Tsinghua University, Beijing, China, 2014 | 5th EuCheMS Chemistry Congress, Istanbul, Turkey, 2014 | World Economic Forum, Dubai, UAE, 2014 | Conference on Solid State Chemistry, Slovakia, 2014 | Latin American Chemistry Conference, Lima, Peru 2014 | Industrial Technologies, Athens, Greece, 2014 | Annual Summit of the Global Network of the Science Academies, Rio, Brazil 2013 | World Chemistry Congress, Istanbul, Turkey, 2013 | D. Mendeleev University of Chemical Technology of Russia, Moscow, Russia, 2013 | Innovation Forum, Moscow, Russia,

2013 | EuroNanoForum, Dublin, Ireland, 2013 | University of Palermo, Italy, 2012 | Universitat Autònoma de Barcelona, Barcelona, Spain, 2012 | Water Water Forum, Marseille, France, 2012

TEACHING EXPERIENCE

Inorganic Chemistry, (Degree in Chemistry) Taught: 2014-2016 | Solid State Chemistry (Master in Nanoscience and Nanotechnology Molecular), Newly developed course, Taught: 2010-2016 | Introduction to Nanoscience and Nanotechnology, (Master in Nanoscience and Nanotechnology Molecular), Newly developed course, Taught: 2010-2016 | Carbon Science and Technology (Degree in Chemical Engineering) Taught: 2014 | Fibers and Composite Materials (Degree in Chemical Engineering) Taught: 2011 | Industrial Inorganic Chemistry (Degree in Chemical Engineering) Taught: 2009 | Structure and Properties of Matter (Degree in Chemical Engineering) Taught: 2007 | Chemical Bonding and Materials Properties, (Degree in Chemistry) Taught: 2007

Educator and Scientist

Professor and Director of the Molecular Nanotechnology Lab at the University of Alicante where he teaches and works in the area of nanomaterials for energy applications. He is inventor of over 50 patents, mostly in commercial applications, and author of a great number of scientific articles, book chapters and scientific books. Javier's pioneering work in the area of mesoporous zeolites has initiated a new research area that today has international conferences, hundreds of books and publications. He is the founder and co-organizer of the International Symposia on Mesoporous Zeolites. Recognized as a leader in nanotechnology and materials science, in 2005, Javier was awarded the Europa Medal, awarded annually to the outstanding European chemist under the age of 35, and he received the Silver Medal of the European Young Chemist Award in 2006. In 2007, Javier received the TR35 Award from MIT's Technology Review magazine and in 2009, he was selected as a Young Global Leader by the World Economic Forum. In 2014, Javier was awarded the Rey Jaime I Award, one of the highest Science awards in Spain.

Entrepreneur

Co-founder of Rive Technology Inc. (Boston, MA), a VC-funded MIT spin-off with more than 40 employees commercializing advanced nanomaterials for energy applications. Javier developed its core technology during his postdoctoral stay with a Fulbright Grant at Massachusetts Institute of Technology (MIT). He helped to raise \$67M, hire over 40 employees; supervise technical progress and the operations of the company as member of the board of directors. Rive Technology signed an agreement with Grace Davison in 2010 and from that, Rive catalysts are being commercialized in several U.S. refineries with a drastic increase in the production of liquid fuels and energy efficiency of the process with an accrued benefit of \$2 per barrel processed, offering potential value industry 10 billion dollars annually. The improved efficiency of the process can significantly reduce CO₂ emissions of this important chemical industry. Based on refinery data, the reduction in CO₂ can be as high as 8 % when replacing existing catalysts by the mesostructured zeolites discovered by Javier.

Leadership

Javier is the vice-chairman of the Emerging Technologies World Economic Forum in Davos, and member of the Forum of Young Global Leaders and the Global Young Academy, where he participates in several initiatives to promote science among young people, especially in developing countries and among women. Javier is also a consultant of the European Commission for innovation and entrepreneurship issues and member of the Round Table of Top Entrepreneurs. Since 2009, Javier is an expert evaluator of the European Institute of Innovation and Technology (EIT). He is the youngest member ever of the Bureau of IUPAC where he supervises the activities, budget and strategy of the Union. Javier is a prolific author in publications such

as Science, the Washington Post, the World Economic Forum, the Huffington Post, and Chemistry International.

For more information: <http://rivetechnology.com/>; <http://www.nanomol.es>