

Curriculum Vitae

PERSONAL INFORMATION

Name: Jorge Quereda Bernabeu

Location and date of birth: Madrid, 18/03/1988

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SUMMARY OF SCIENTIFIC ACTIVITY

During the last 6 years I have worked in research in the field of two-dimensional (2D) materials and devices. First, as PhD student at Universidad Autónoma de Madrid, I studied the electrical, mechanical and optical properties of 2D materials and developed different techniques to controllably tune these properties. Next as postdoc researcher at the Zernike Institute for Advanced Materials I initiated a new independent research line to study nonlinear optoelectronic effects in 2D transition metal dichalcogenides for use in spintronic devices, designing and carrying out the experiments for this purpose. My responsibilities at the University of Groningen involved as well the supervision of a master thesis, daily coordination and mentoring of two PhD students involved in my research line, and contributions to teaching in the form of tutorial sessions at a Master's degree level, as detailed elsewhere in this CV. The quality of my postdoc work was recognized by a nomination for the Dutch KNAW National Postdoc Prize 2019 as one of the top 3 postdoc researchers of the University of Groningen. In June 2019 I joined the nanotechnology group at the University of Salamanca, where I currently work as a postdoc researcher.

My research work has resulted so far in the publication of 12 scientific articles in peer-reviewed, high impact journals including Nature Communications, Nano Letters or 2D Materials among others. It has been presented as well in seminars and scientific conferences both in a national and international level, in the form of invited talks, oral communications and scientific posters. My scientific articles accumulate more than 410 citations, with an h-index of 8 (Source: Google Scholar). I have also dedicated time and effort to scientific divulgation, writing an article for an education oriented journal (American Journal of Physics) and coordinating seminar cycles and stargazing activities as member and president of the Astronomy Association at Universidad Autónoma de Madrid.

PROFESSIONAL EXPERIENCE

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| 01/02/2017 – today | Postdoc Researcher. Physics of Nanodevices Group at the Zernike Institute for Advanced Materials (Groningen, The Netherlands). |
| 01/12/2012 – 30/6/2016 | PhD researcher. Nanoelectronics group at Universidad Autónoma de Madrid (Madrid, Spain).
PhD Supervisor: Prof. Gabino Rubio Bollinger |

ACADEMIC BACKGROUND

- 2013 – 2016 PhD in Physics (Electronic, mechanical and electrical properties of two-dimensional semiconductors)
- 2012 – 2013 Master in Nanoscience and Molecular Nanotechnology.
Universidad Autónoma de Madrid.
- 2007 – 2012 Degree in Physics.
Universidad Autónoma de Madrid.

SCIENTIFIC PUBLICATIONS

Journal articles

2019

[13] - *Semiconductor channel-mediated photodoping in h-BN encapsulated monolayer MoSe₂ phototransistors.*

Jorge Quereda, Talieh S Ghiasi, Caspar H van der Wal, Bart J van Wees.
2D Materials, 2019.

2018

[12] - *Bilayer h-BN barriers for tunneling contacts in fully-encapsulated monolayer MoSe₂ field-effect transistors.*

Talieh S Ghiasi, Jorge Quereda and Bart J van Wees.
2D Materials 6, 015002.

[11] - *Symmetry regimes for circular photocurrents in monolayer MoSe₂*

Jorge Quereda, Talieh S Ghiasi, Jhih-Shih You, Jeroen van den Brink, Bart J van Wees, Caspar H van der Wal.
Nature Communication **9**, 3346.

2017

[10] – *Observation of bright and dark exciton transitions in monolayer MoSe₂ by photocurrent spectroscopy.*

J Quereda, TS Ghiasi, FA van Zwol, CH van der Wal, BJ van Wees.
2D Materials 5, 015004.

[9] – *Strain engineering of Schottky barriers in single- and few-layer MoS₂ vertical devices.*

Jorge Quereda, Andrés Castellanos-Gomez, Nicolás Agrait and Gabino Rubio-Bollinger.
2D Materials 4 (2), 021006

2016

[8] - *Strong quantum confinement effect in the optical properties of ultrathin In₂Se₃*

Jorge Quereda, Gabino Rubio-Bollinger, Nicolás Agrait and Andres Castellanos-Gomez.
Advanced Optical Materials 4 (12), 1939-1943.

[7] - *Strong modulation of optical properties in black phosphorus through strain-engineered rippling.*

Jorge Quereda, Vincenzo Parente, Pablo San-José, Nicolás Agrait, Gabino Rubio-Bollinger,

Francisco Guinea, Rafael Roldán, Andres Castellanos-Gomez.
Nano letters 16 (5), 2931-2937.

[6] - Enhanced superconductivity in atomically thin TaS₂.

Efren Navarro-Moratalla, Joshua O. Island, Samuel Mañas-Valero, Elena Pinilla-Cienfuegos, Andres Castellanos-Gomez, Jorge Quereda, Gabino Rubio-Bollinger, Luca Chirolli, Jose Angel Silva-Guillen, Nicolás Agraït, Gary A. Steele, Francisco Guinea, Herre S.J. van der Zant, Eugenio Coronado.
Nature Communications (7), 11043.

2015

[5] - *Enhanced Visibility of MoS₂, MoSe₂, WSe₂ and Black-Phosphorus: Making Optical Identification of 2D Semiconductors Easier.*

Gabino Rubio-Bollinger, Ruben Guerrero, David Perez de Lara, Jorge Quereda, Luis Vaquero-Garzon, Nicolas Agraït, Rudolf Bratschitsch, Andres Castellanos-Gomez.
Electronics, 4(4), 847-856.

[4] - *Spatially resolved optical absorption spectroscopy of single-and few-layer MoS₂ by hyperspectral imaging.*

Andres Castellanos-Gomez, Jorge Quereda, Herko P van der Meulen, Nicolás Agraït, Gabino Rubio-Bollinger.
Nanotechnology, 27 (11), 115705.

2014

[3] - *Single-layer MoS₂ roughness and friction quenching by interaction with atomically flat substrates.*

Jorge Quereda, Andres Castellanos-Gomez, Nicolás Agraït and Gabino Rubio-Bollinger.
Applied Physics Letters 105 (5), 053111.

2013

[2] - *Fast and reliable identification of atomically thin layers of TaSe₂ crystals.*

Andres Castellanos-Gomez, Efrén Navarro-Moratalla, Guillermo Mokry, Jorge Quereda, Elena Pinilla-Cienfuegos, Nicolás Agraït, Herre S. J. van der Zant, Eugenio Coronado, Gary A. Steele, Gabino Rubio-Bollinger.
Nano Research, March 2013, Volume 6, Issue 3, pp 191-199.

2011

[1] - *Calibrating the frequency of tuning forks by means of Lissajous figures.*

Jorge Quereda, Marina Ramón, Blanca Silva, Juan José Hinarejos, José Gabriel Rodrigo, Daniel Farías.
American Journal of Physics, Volume 79, Issue 5, pp. 517-520 (2011).

Scientific book chapters

2013 - *Mechanical properties and electric field screening of atomically thin MoS₂ crystals.*

Jorge Quereda, Gabino Rubio-Bollinger, Nicolas Agraït, Andres Castellanos-Gomez. MoS₂, 129-153, ed. Springer.

CONTRIBUTIONS TO CONFERENCES AND SEMINARS

23/01/2018 – Oral communication: “Observation of bright and dark exciton transitions in monolayer MoSe₂ by photocurrent spectroscopy”. Physics@Veldhoven 2018. Organizer: Netherlands Organization for Scientific Research (NWO)

27/03/2017 – Poster: “*Strain engineering of Schottky barriers in single and few-layer MoS₂ vertical devices*”. Graphene 2017. Barcelona. Organizer: Fundación Phantoms.

22/6/2016 – Oral communication: “*Strong quantum confinement effect in the optical properties of ultrathin In₂Se₃*”. 6th IMDEA early stage researchers meeting, Madrid. Organizer: IMDEA Nanoscience.

2/5/2016 – Oral communication: “*Strong quantum confinement effect in the optical properties of ultrathin In₂Se₃*”. European Material Research Society (E-MRS) Spring Meeting 2016. Lille. Organizer: E-MRS.

8/9/2015 – Poster: “*Strain engineering of Schottky barriers in single and few-layer MoS₂ vertical devices*”. Trends in Nanotechnology 2015 (TNT2015). Toulouse. Organizer: Fundación Phantoms.

19/12/2014 – Poster: “*MoS₂ roughness and friction quenching by interaction with atomically flat substrates*”. XVII Jornada de Jóvenes Científicos 2014. Madrid. Organizer: Instituto Nicolás Cabrera (INC).

25/6/2014 – Oral communication: “*MoS₂ roughness and friction quenching by interaction with atomically flat substrates*”. Early Stage Researchers Workshop 2014. Madrid. Organizer: IMDEA Nanociencia.

19/12/2013 – Poster: “*Effect of the substrate on the roughness of atomically thin MoS₂ crystals*”. Jornada de Jóvenes Científicos 2013. Madrid. Organizer: Instituto Nicolás Cabrera (INC).

30/10/2013 – Oral communication: “*Effect of the substrate selection in the behavior of atomically thin MoS₂ crystals*”. European School of Molecular Nanotechnology. Cuenca. Organizer: Instituto de Ciencia Molecular (ICMol).

1/11/2013 – Attendance. Workshop on 2D materials. Cuenca. Organizer: Universidad de Castilla - La Mancha.

26/9/2013 – Attendance. 3rd Symposium on Carbon Nanoforms. Madrid. Organizer: Instituto Madrileño de Estudios Avanzados (IMDEA).

6/6/2013 – Attendance. Curso de Introducción a la Física de los Sistemas de Vacío y Jornada Técnica del Vacío. Madrid. Organizer: Instituto Nicolás Cabrera, Universidad Autónoma de Madrid y Oerlikon Leybold Vacuum.

3/2/2013 – Oral communication: “*Optical Identification of Two-Dimensional Dichalcogenide Crystals*”. XIV Escuela de Materiales Moleculares. Almagro. Organizer: Universidad de Castilla - La Mancha.

14/12/2012 – Attendance. Jornada de Jóvenes Científicos 2012. Madrid. Organizer: Instituto Nicolás Cabrera (INC).

TEACHING

2017-2018 – Co-supervision of Master Project from Feitze A. van Zwol, MSc.

2017-2019 – Optical Properties of Solids. Tutorial sessions. Master in Functional Materials. University of Groningen. Professor: Caspar van der Wal.

2013-2014 – Collaboration to teaching in the course *Statistical physics*. Grade in physics. 3rd year. Universidad Autónoma de Madrid. Professor: Gabino Rubio Bollinger.

2014-2016 – Collaboration to teaching in the course *Introduction to computational Calculus*. Grade in physics. 1st year. Universidad Autónoma de Madrid. Professor: Gabino Rubio Bollinger.

2015-2016 – Collaboration to teaching in the course *Experimental Techniques in Solid State Physics*. Master in Solid State Physics and Nanotechnology. Universidad Autónoma de Madrid. Professor: Gabino Rubio Bollinger.

LANGUAGES AND CERTIFICATES:

English (full professional proficiency)

First Certificate in English, University of Cambridge.

Spanish (native proficiency)

OTHER EDUCATION ACTIVITIES

2014 Online course: Writing in the Sciences.

Stanford University (through Coursera®).

2015 Online course: Introduction to R programming. (Specialization in Data Science)

Johns Hopkins University (through Coursera®).

2015 Online course: Getting and cleaning data. (Specialization in Data Science)

Johns Hopkins University (through Coursera®).

HONORS AND OTHERS

Nomination for the Dutch KNAW National Postdoc Prize 2019 as one of the top 3 postdoc researchers of the University of Groningen.

President of the Astronomy Student Society (Agrupación Astronómica Antares) at Universidad Autónoma de Madrid during 2011 and 2012.

Noche en Blanco, Madrid, 2010. Visionado de Estrellas (Stargazing). Co-organizer as a member of the Antares Astronomy Club (UAM) in collaboration with Spanish Red Cross.

Co-organizer in many other activities as a member of the Antares Astronomy Club—talks and public stargazing sessions for the campus community, high schools and primary schools.