

## CURRICULUM VITAE

Prof. Bianchi Méndez

Date of birth: 31 January 1965, Spain

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Present position: Full Professor in Materials Science at Universidad Complutense of Madrid

### Academic Degrees and Positions:

Full Professor in Materials Science from 2007.

Associate Professor in Solid State Physics at University Complutense (1997-2007)

Assistant Professor in Materials Science at Universidad Complutense (1988-1997)

PhD degree in Physics, Universidad Complutense, 1991.

Graduate in Physics, (Specialist: Materials Physics) Universidad Complutense, 1987

### Research lines:

Optical properties of semiconducting materials: luminescence and waveguiding behavior. Defect related physical properties of crystals. Application of advanced scanning electron microscopy techniques to characterization of electronic materials: Cathodoluminescence. Electron Beam induced Current. Tunneling spectroscopy.

Semiconducting oxides. III-V and II-VI semiconductors. Synthesis of elongated semiconductor nano- and microstructures. Nanowires. Doping of nanostructures. Physical properties of semiconductor nanowires.

### Research projects:

Research member of 27 projects funded by the Ministry of Education and Science in the Physics and Materials programs in the periods 1991-1994, 1994-1997, 1997-2000, 2000-2003, 2003-2006, 2006-2009, 2009-2012 and 2012-2016. Bilateral projects funded by the Ministries of Education and Science and of Foreign Affairs, with Germany (1989-1991) Portugal (1995) Italy (1994-1995) France (1998) as well as 2 projects funded by Madrid regional government (2005-2009). I have been participated in an EU Training Site project (2002-2005) and in an EU Research Training Network (2002-2005). Principal researcher of a bilateral project with Portugal (2009-2011).

### Other research activities

Director of 4 Ph.D thesis in the field of Materials Physics.

Director of 2 Laurea thesis in the field of Materials Physics.

Director of 6 Research projects in the Master of Applied Physics and Materials Engineering.

Supervisor of the research work of 4 predoc Fellows in the framework of European training projects for 42 months.

Symposium organizer of the Conference on Beam Injection Assessment of Microstructures in Semiconductors in 1996 and 2008 and Guest editor of their corresponding special issues of Materials Science and Engineering B 42 (1996) and Superlattices and Microstructures 45 (2009).

Chairperson of Symposium P: Functional Nanowires: Synthesis, Characterization and Applications within the 2013 E-MRS Spring Meeting.

### Evaluation expertise

Member of evaluation panels for:

- INTAS projects (2003, 2005 and 2006)
- European FP7 cooperation projects (2009).
- ERA- NET Russia projects 2010 and 2011.
- Eurasia Foundation (2010 and 2011).

Regular evaluator for the National Evaluation Agency for national research projects since 2006.

Regular referee activities for several publications in the field of Materials Science and Applied Physics.

### Publications

B. Méndez has co-authored 107 publications as senior researcher in international journals on Materials Science and Applied Physics with an overall of 805. Index h = 16. She has more than 115 contributions to international conferences including 12 invited talks.

Publications since 2009:

1. G. Martínez-Criado, J. Segura-Ruiz, M.-H. Chu, R. Tucoulou, I. López, E. Nogales, B. Méndez and J. Piqueras, "Crossed Ga<sub>2</sub>O<sub>3</sub>/SnO<sub>2</sub> multiwire architecture: a local structure study with nanometer resolution" *Nano Letters*, 14, 5479-5487 (2014).
2. I. López, A. Castaldini, A. Cavallini, E. Nogales, B. Méndez and J. Piqueras, "β-Ga<sub>2</sub>O<sub>3</sub> nanowires for ultraviolet light selective frequency photodetector" *Journal of Physics D: Applied Physics*, 47, 415101 (2014).
3. T. Cebriano, Y Ortega, P Hidalgo, D Maestre, B Méndez and J Piqueras "Study of mechanical resonances of Sb<sub>2</sub>O<sub>3</sub> micro- and nanorods" *Nanotechnology*, 25, 235701 (2014).
4. I. López, E. Nogales, B. Méndez, J. Piqueras, A. Castaldini and A. Cavallini, "Hierarchical ZnGa<sub>2</sub>O<sub>4</sub> and Cr doped Zn<sub>1-x</sub>Mn<sub>x</sub>Ga<sub>2</sub>O<sub>4</sub> nanostructures for room temperature light emitting devices" *Materials Physics Express*, 1, 025017 (2014).
5. K. Lorenz, J. G. Correia, L.C. Alves, E. Alves, I. López, E. Nogales, B. Méndez, J. Piqueras, M. B. Barbosa, J. P. Araújo, J. N. Gonçalves, J. Rodrigues, M. Peres, T. Monteiro, E. G. Villora, K. Shimamura, "Doping of Ga<sub>2</sub>O<sub>3</sub> bulk crystals and nanowires by ion implantation", Ref: *Oxide-based Materials and Devices V*, edited by Ferechteh Hosseini Teherani, David C. Look, David J. Rogers, Proc. of SPIE Vol. 8987, 89870M • doi: 10.1117/12. 2037560
6. A. Gonzalo, E. Nogales, B. Méndez and J. Piqueras, "Influence of growth temperature on the morphology and luminescence of Ga<sub>2</sub>O<sub>3</sub>:Mn nanowires" *physica status solidi (a)* 211, 494-497 (2014).
7. I. López, K. Lorenz, E. Nogales, B. Méndez, J. Piqueras, E. Alves and J.A. García, "Study of the relationship between microstructure and luminescence in rare earth implanted Ga<sub>2</sub>O<sub>3</sub> nanowires during annealing treatments" *J Materials Science* 49, 1279-1285 (2014).
8. M. B. Barbosa, J. N. Gonçalves, A. Redondo-Cubero, S. M. C. Miranda, R. Simon, P. Kessler, M. Brandt, F. Henneberger, E. Nogales, B. Méndez, K. Johnston, E. Alves, R. Vianden, J. P. Araújo, K. Lorenz, J. G. Correia, "Nanostructures and thin films of transparent conductive oxides studied by perturbed angular correlations" *physica status solidi (b)* 250, 801-808 (2013)
9. T. Cebriano, B. Méndez, J. Piqueras, "Sb<sub>2</sub>O<sub>3</sub> microrods: Self-assembly phenomena, luminescence and phase transition" *Journal of Nanoparticle Research*, 15, 1667 (2013).
10. J. Rodrigues, S.M.C. Miranda, M. Peres, E. Nogales, L.C. Alves, E. Alves, G. Tourbot, B. Daudin, B. Méndez, K. Lorenz, T. Monteiro, "A comparative study of photo-, cathodo- and ionoluminescence of GaN nanowires implanted with rare earth ions" *Nuclear Instruments and Methods in Physics Research B*, 306, 201-206 (2013).
11. K. Lorenz, E. Nogales, S. M. C. Miranda, N. Franco, B. Méndez, E. Alves, G. Tourbot, B. Daudin, "Enhanced red emission from Praseodymium doped GaN nanowires by defect engineering" *Acta Materialia*, 61,3278-3284 (2013).
12. B. Méndez, T. Cebriano, I. López, E. Nogales, and J. Piqueras, "Waveguiding and confinement of light in semiconductor oxide microstructures" Ref: *Oxide-based Materials and Devices IV*, edited by Ferechteh Hosseini Teherani, David C. Look, David J. Rogers, Proc. of SPIE Vol. 8626, 86260T • © 2013 SPIE • CCC code: 0277-786X/13/\$18 • doi: 10.1117/12.2002374

13. I. López, E. Nogales, B. Méndez, J. Piqueras, A. Peche, J. Ramírez-Castellanos and J. González-Calbet, "Influence of Sn and Cr Doping on Morphology and Luminescence of Thermally Grown Ga<sub>2</sub>O<sub>3</sub> Nanowires" *The Journal of Physical Chemistry*, C 117, 3036-3045 (2013).
14. T. Cebriano, B. Méndez and J. Piqueras, "Micro- and nanostructures of Sb<sub>2</sub>O<sub>3</sub> grown by evaporation-deposition: Self assembly phenomena, fractal and dendritic growth" *Materials Chemistry and Physics*, 135, 1096 (2012).
15. I. López, E. Nogales, B. Méndez and J. Piqueras, "Resonant cavity modes in gallium oxide microwires" *Appl. Phys. Lett.* 10, 261910 (2012).
16. E. Nogales, I. López, B. Méndez, J. Piqueras, K. Lorenz, E. Alves and J.A. García "Doped gallium oxide for photonics" Ref: *Oxide-based Materials and Devices III*, edited by Ferechteh H. Teherani, David C. Look, David J. Rogers, Proc. of SPIE Vol. 8263, 82630B · © 2012 SPIE.
17. T. Cebriano, B. Méndez and J. Piqueras, "Study of luminescence and optical resonances in Sb<sub>2</sub>O<sub>3</sub> micro- and nanotriangles" *J. of Nanopart. Res.* 14, 1215 (2012).
18. N. Catarino, E. Nogales, N. Franco, V. Darakchieva, S. M. C. Miranda, B. Méndez, E. Alves, J. G. Marques and K. Lorenz, "Enhanced dynamic annealing and optical activation of Eu implanted a-plane GaN," *Europhysics Letters*, 97, 68004 (2012)
19. I. López, A. Utrilla, E. Nogales, P. Hidalgo, B. Méndez, J. Piqueras, A. Peche, J. Ramirez-Castellanos and J. González-Calbet, "In doped Gallium Oxide Micro- and Nanostructures: Morphology, Structure and Luminescence Properties" *J. Phys. Chem. C*, 116, 3935 (2012)
20. I. López, E. Nogales, P. Hidalgo, B. Méndez, J. Piqueras, Field emission properties of gallium oxide micro- and nanostructures in the scanning electron microscope, *physica status solidi* 209, 113 (2012)
21. E. Nogales, P. Hidalgo, K. Lorenz, B. Méndez, J. Piqueras and E. Alves, "Cathodoluminescence of rare earth implanted Ga<sub>2</sub>O<sub>3</sub> and GeO<sub>2</sub> nanostructures", *Nanotechnology* 22 (2011) 285706.
22. J. Díaz, I. López, E. Nogales, B. Méndez and J. Piqueras, "Synthesis and characterization of silicon doped gallium oxide nanowires for optoelectronic UV applications" *J. of Nanoparticle Research*, 13, 1833 (2011).
23. E. Nogales, B. Méndez and J. Piqueras, Assessment of waveguiding properties of gallium oxide nanostructures by angle resolved cathodoluminescence in a scanning electron microscope, *Ultramicroscopy*, 111, 1037 (2011).
24. F. Y. Bruno, J. Tornos, M. Gutierrez del Olmo, G. Sanchez Santolino, N. M. Nemes, C. León, J. Santamaria, M. Garcia-Hernández, B. Mendez, J. Piqueras, G. Antorrena, L. Morellón, and J. M. De Teresa, "Anisotropic magnetotransport in SrTiO<sub>3</sub> surface electron gases generated by Ar<sup>+</sup> irradiation" *Phys. Rev. B*, 83, 245120 (2011).
25. P. Hidalgo, E. Liberti, Y. Rodriguez-Lazcano, B. Méndez and J. Piqueras, "GeO<sub>2</sub> nanowires doped with optically active ions" *Journal of Physical Chemistry C*, 113, 17200 (2009)
26. E. Nogales, B. Méndez, J. Piqueras and J. A. García, "Europium gallium oxide nanostructures for room temperature luminescent photonic devices" *Nanotechnology*, 11, 115201 (2009).
27. E. Nogales, B. Sánchez, B. Méndez, J. Piqueras, « Cathodoluminescence study of isoelectronic doping of gallium oxide nanostructures" *Superlattices and Microstructures* 45, 156 (2009).

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