Fernando
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Resumé

Education

1982–1986 **Ph.D. in Physics**, *Autonomous University of Madrid (UAM)*, Madrid.

1982–1982 **M.Sc. in Physics**, *Autonomous University of Madrid (UAM)*, Madrid.

1977–1982 **B.Sc. in Physics**, *Autonomous University of Madrid (UAM)*, Madrid.
I studied the specialty of Optics and Structure of Matter

Ph.D. thesis

Title Raman spectroscopy of crystals with molecular groups: NH_4MX_3 and $MX_2{\cdot}6H_2O$

Supervisor Prof. José Manuel Calleja

Description I studied the structural and vibrational properties of ammonium trihalide perovskites and hexahydrates. Special emphasis was given to the effect of structural phase transitions and hydrogen bonding on the local symmetry and internal vibrations of the molecular groups ammonium and water. The experiments included low temperatures down to 10 K and high hydrostatic pressures on a diamond anvil cell.

Date October, 1986

Employment/Positions

13-06-2006–present **Senior Scientist**, *Materials Science Institute of Madrid (ICMM), CSIC*, Madrid, Spain.
Detailed achievements:
- In charge of the Raman Microscopy Lab
- Setup of a homemade near-infrared Raman microspectrometer
- Principal investigator of various research projects
- Studied the relationship between microstructure and properties of photonic materials like semiconductors and optical waveguides produced by ion irradiation
- Studied biological materials (natural and artificial silk fibers
- Studied the structural flexibility of oxides with catalytic applications

15-02-1988 – 12-06-2006 **Research Associate**, *Materials Science Institute of Madrid (ICMM), CSIC*, Madrid, Spain.

Detailed achievements:

- Established the Raman Microscopy Lab in 1995
- Studied porous silicon, semiconductor nanostructures and photonic materials like $LiNbO_3$ waveguides and CdTe thin films
- Teaching
  - Lecturer at the Autonomous University of Madrid. Course: Analytical mechanics for Chemistry undergraduates (1 semester)
  - Lecturer in the Course on Science and engineering of the surface of metallic materials and corrosion imparted by their Spanish Center for Metallurgical Research (CENIM) (biannual, 1996–2011)

01-11-1990 – 30-11-1991 **Visiting scientist**, *Max-Planck Institute for Solid State Research (MPI-FKF)*, Stuttgart, Germany.

1 year working with Prof. Holger T. Grahn, in the groups of Prof. Klaus von Klitzing and Prof. Klaus Ploog.

Detailed achievements:

- Studied the optical and electro-optical properties of complex semiconductor superlattices

14-09-1987 – 31-12-1989 **Postdoctoral scientist**, *IBM Thomas J. Watson Research Center*, Yorktown Heights, New York, USA.

More than 2 years working with Prof. Emilio Mendez, in the group of Prof. Leo Esaki and Prof. Leroy L. Chang. Studying the effect of electric fields on the optical properties of semiconductor nanostructures

Detailed achievements:

- Running and upgrading a lab on semiconductor spectroscopy
- First observation of Wannier-Stark localization
- First observation of the electric-field induced doubly-resonant Raman effect

06-01-1987 – 31-08-1987 **Research Associate**, *Institute for Applied Physics, University of Hamburg*, Hamburg, Germany.

8 months, in the group of Prof. Jörg P. Kotthaus.

Detailed achievements:

- Setup of a new Raman laboratory for the study of semiconductor nanostructures at variable temperatures (10–300 K) and variable excitation wavelengths in the near infrared with a dye laser and an argon ion laser. The Raman spectrometer was one of the first Dilor XY models, with a diode array detector and many options: macro/microscope collection, triple monochromator with the first two working either in subtractive or additive mode

Research interests

- Raman microscopy of materials: thin films and coatings, biological, functional oxides, and photonic materials
- Nanoscience
- Optical properties
- Electro-optical and magneto-optical properties of nanostructured semiconductors
- Internal vibrations of molecular groups in crystals to probe structural phase transitions

Experimental techniques

- Raman microspectroscopy
- Optical spectroscopies: Raman, absorption, luminescence, photocurrent
- High magnetic fields
- Low temperatures
- High hydrostatic pressure with a diamond anvil cell
- Computers for lab automation and data analysis

Languages

Spanish	Native	
English	Fluent	*2 years living and working in the United States*
German	Basic	*"Deutsch als Fremdsprache" certificate from Goethe Institut, Stuttgart (1991)*
Russian	Basic	*Studied 2 courses at the University*

Computer skills

OS	Windows, Linux, Android	Math	MatLab, Octave
Office	MS Office, LibreOffice, LaTeX	Plotting	Corel, Inkscape, GIMP
Scientific	Origin, GnuPlot		

Grants

1994 **Raman microscope**, *Spanish Government*, 96.162 Euros, Principal Investigator.
Infrastructure funding to setup a Raman Microscopy Laboratory

2000–2001 **Characterization of zirconium oxides by Raman spectroscopy (COCER)**, *Iberdrola Company*, 63106 Euros, Principal Investigator.
15 months. Study of the microstructure of the protective coatings of the cladding bars of zirconium alloys used in nuclear power stations.

2003–2004 **Writing and characterization of microstructures on Cu_3N films**, *Autonomous Community of Madrid*, 13.800 Euros, Principal Investigator.

2004–2007 **Biosensors based on nanostructured compounds of silicon**, *Spanish Government*, 54.280 Euros, Principal Investigator.
Coordinated project

2012–2015 **Micro- and nanostructural flexibility in mixed oxides of catalytic interest (FlexOCat)**, *Spanish Government*, 210.000 Euros, Principal Investigator.
4 years

2015–2019 **Nano-structural flexibility, magnetic and catalytic properties in multifunctional metallic oxides (NANOMAGOX)**, *Spanish Government*, 121.000 Euros, Principal Investigator.
4.5 years

1988–present **Co-investigator in other 22 grants**.

Graduate students advised or co-advised

1999–2002 **Sonsoles Manotas-Cabeza**, *Microspectroscopy of optoelectronic materials: porous silicon and GaAs/AlGaAs microcavities*, Ph.D. Thesis, Department of Materials Physics, Autonomous University of Madrid.

2005–2008 **Fernando Perales de Mingo**, *Thin films and multilayers of MgF_2, ZnS, Sb_2S_3 y Fe_3O_4*, Ph.D. Thesis, Department of Materials Physics, Autonomous University of Madrid.
Co-advised with Dr. Carmen de las Heras

2016–2021 **Jon Canca Ruiz**, *Order-disorder phenomena in oxides with a rutile-type structure and their application as supports in heterogeneous catalysts* , Ph.D. Thesis, Department of Applied Chemistry, Autonomous University of Madrid.
Co-advised with Dr. Jorge Hernández-Velasco

Membership in professional societies

1983–present **Spanish Royal Physical Society (RSEF)**.

1985–present **American Physical Society (APS)**.

1997–present **Optica - Optical Society of America (OSA)**.

1997–present **Materials Research Society (MRS)**.

2018–present **Spanish Materials Society (SOCIEMAT)**.

2018–present **Spanish Vacuum Society (ASEVA)**.

2021–present **Spanish Optical Society (SEDOPTICA)**.

Honors and awards

2021–present **Member of the Executive Council (Treasurer)**, *Spanish Vacuum Society (ASEVA)*.

2021-10-04–2021-10-06 **Member of the Organizing Committee**, *Iberian Vacuum Meeting (RIVA Online) 2021*.

Popularization

Internet

2001–2005 **SpectroscopyNow.com web portal**, *Web editor of the Raman section*.

Bibliometrics

Articles	>135	*Published in peer-reviewed scientific journals*
Monographs	4	
Chapters	10	
h-index	33 (Web of Science), 37 (Google Scholar)	
Citations	3825	

Books

- F. Agulló-López, J. M. Cabrera, and F. Agulló-Rueda, Electrooptics: Phenomena, Materials and Applications (Academic Press, New York, 1994)

- J. M. Albella, J. M. Martínez-Duart and F. Agulló-Rueda, Fundamentals of microelectronics, nanoelectronics and photonics (in Spanish) (Pearson Educación, Madrid, 2005)
- J. M. Martínez-Duart, R. J. Martín-Palma, and F. Agulló-Rueda, Nanotechnology for microelectronics and optoelectronics (Elsevier, 2006)
- J. M. Martínez-Duart, R. J. Martín-Palma and F. Agulló-Rueda, Nanotechnology for microelectronics and optoelectronics (in Russian) (Technosphera, Moscow, Russia, 2007)

Contributed book chapters

- F. Palacios, J. Bartolomé, F. Agulló-Rueda, J. M. Calleja, M. Cardona, K. Syassen, and K. Stroessner, "Spectroscopic study of trifluoroperovskites of ammonium under high pressure," in *Quantum Aspects of Molecular Motions in Solids* (A. Heidemann, A. Magerl, D. Richter, M. Prager, and T. Springer, eds.) (Springer-Verlag, Berlin, 1987)
- F. Agulló-Rueda, "The harmonic oscillator: a tool for contemporary physics (in Spanish)" in *Contemporary themes of physics*, (J. García Solé and F. Jaque Rechea, eds.) (Publications of the Autonomous University of Madrid, 1992)
- F. Agulló-Rueda, "Raman spectroscopy (in Spanish)", in *Introduction to Materials Science (in Spanish)*, (J. M. Albella, A. M. Cintas, T. Miranda, and J. M. Serratosa, eds.) (Publications of CSIC, 1993).
- F. Agulló-Rueda and J. Feldmann, "Wannier-Stark localization and Bloch oscillations," in *Semiconductor superlattices. Growth and Electronic Properties* (H. T. Grahn, ed.) (World Scientific Publishing, 1995). pp. 99–153.
- F. Agulló-Rueda, "Semiconductors with their own light (in Spanish)" in *Light: yesterday, today, and tomorrow (in Spanish)* (J. García Solé and F. Jaque Rechea, eds.) (Colección Alianza Universidad, Alianza Editorial, 1996).
- F. Agulló-Rueda, "Raman spectroscopy (in Spanish)", in *Science and Engineering of the Metallic Surface (in Spanish)* (A. J. Vázquez and J. J. de Damborenea, eds.) (Publicaciones del CSIC, Madrid, 2000), pp. 561–572.
- F. Agulló-Rueda and R. Serna, "Optical methods (in Spanish)" in *Thin films and coatings (in Spanish)* (J. M. Albella, ed.) (Publications of CSIC, Madrid, 2003).
- F. Agulló-Rueda and J. M. Albella, "Applications of semiconductor films in microelectronics (in Spanish)" in *Thin films and coatings (in Spanish)* (J. M. Albella, ed.) (Publications of CSIC, Madrid, 2003).
- R. Serna and F. Agulló-Rueda, "Optical properties of thin films: Applications (in Spanish)" in *Thin films and coatings (in Spanish)* (J. M. Albella, ed.) (Publications of CSIC, Madrid, 2003).
- F. Agulló Rueda, "Raman spectroscopy (in Spanish)", in *Science and Art: Experimental Sciences and Preservation of Historic Heritage (in Spanish)*, (S. Prous, M. del Egido, and T. Calderón, eds.) (Instituto del Patrimonio Histórico Español, Madrid, 2008), Ch. 3.4, pp. 117–125.

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Peer-reviewed articles

1 J. Bartolomé, F. Palacio, J. M. Calleja, F. Agulló-Rueda, M. Cardona, and R. Migoni, "Spectroscopic Study of NH_4ZnF_3 and NH_4MnF_3 Perovskites," J. Phys. C: Solid State Phys. 18, 6083–6098 (1985).

2 J. Bartolomé, F. Palacio, J. M. Calleja, F. Agulló-Rueda, J. D. Tornero, M. Cardona, and R. Migoni, "Dynamics of the NH_4^+ Ion in ABX_3 Perovskites," J. Mol. Struct. 143, 75–78 (1986).

3 F. Agulló-Rueda, J. M. Calleja, F. Jaque, and J. D. Tornero, "Absorption Spectra of NH_4MnCl_3 and NH_4MnF_3," Solid State Commun. 60, 331–335 (1986).

4 F. Agulló-Rueda, J. M. Calleja, and J. D. Tornero, "Raman Spectroscopy of NH_4MnCl_3 Crystal," Solid State Commun. 62, 551–554 (1987).

5 F. Agulló-Rueda, J. M. Calleja, M. Martini, G. Spinolo, and F. Cariati, "Raman and Infrared Spectra of Transition Metal Halide Hexahydrates," J. Raman Spectros. 18, 485–491 (1987).

6 F. Palacios, J. Bartolomé, F. Agulló-Rueda, J. M. Calleja, M. Cardona, K. Syassen, and K. Stroessner, *Spectroscopic Raman study of trifluoroperovskites of ammonium under high pressure* in *Quantum Aspects of Molecular Motions in Solids*, (eds. A. Heidemann, A. Magerl, D. Richter, M. Prager, and T. Springer) (Springer, Berlin, 1987), pp. 38–41.

7 J. L. Martínez, F. Agulló-Rueda, and V. H. Schmidt, "Raman Scattering Study of $Rb_{1-x}(ND_4)_xD_2PO_4$ Mixed Crystal," Ferroelectrics 76, 23–32 (1987).

8 J. García-Solé, F. Agulló-Rueda, C. López, G. Vergara, F. Meseguer, and T. Calderón, "Optical Properties of Natural $PbCO_3$ Single Crystals," Cryst. Latt. Def. and Amorph. Mat. 16, 365–370 (1987).

9 F. Agulló-Rueda, J. M. Calleja, and J. Bartolomé, "Raman spectroscopy of the ammonium Ion in NH_4ZnF_3 and NH_4MnF_3 perovskites: temperature dependence," J. Phys. C: Solid State Phys. 21, 1287–1297 (1988).

10 E. E. Mendez, F. Agulló-Rueda, and J. M. Hong, "Stark Localization in GaAs-GaAlAs Superlattices under an Electric Field," Phys. Rev. Lett. 60, 2426–2429 (1988).

11 F. Agulló-Rueda, E. E. Mendez, J. A. Brum, and J. M. Hong, "Coherence and localization in semiconductor superlattices under electric fields," Surf. Sci. 228, 80–83 (1990), 1–3.

12 F. Agulló-Rueda, E. E. Mendez, and J. M. Hong, "Doubly Resonant Raman Scattering Induced by an Electric Field," Phys. Rev. B 38, 12 720–12 723 (1988).

13 F. Agulló-Rueda, E. E. Mendez, and J. M. Hong, "Quantum coherence in semiconductor superlattices," Phys. Rev. B (Rapid Communications) 40, 1357(R)–1360(R) (1989).

14 E. E. Mendez and F. Agulló-Rueda, "Optical properties of quantum wells and superlattices under electric fields," J. Lumin. 44, 223–232 (1989).

15 H. Ohno, E. E. Mendez, J. A. Brum, J. M. Hong, F. Agulló-Rueda, L. L. Chang, and L. Esaki, "Observation of 'Tamm States' in Superlattices," Phys. Rev. Lett. 64, 2555–2558 (1990).

16 F. Agulló-Rueda, J. A. Brum, E. E. Mendez, and J. M. Hong, "Change in dimensionality of superlattice excitons induced by an electric field," Phys. Rev. B 41, 1676–1679 (1990).

17 F. Agulló-Rueda, E. E. Mendez, H. Ohno, and J. M. Hong, "Interactions between extended and localized states in superlattices," Phys. Rev. B 42, 1470–1473 (1990).

18 E. E. Mendez, F. Agulló-Rueda, and J. M. Hong, "Temperature Dependence of the Electronic Coherence of GaAs-GaAlAs Superlattices," Appl. Phys. Lett. 56, 2545–2547 (1990).

19 J. A. Brum and F. Agulló-Rueda, "Stark ladder excitonic transitions," Surf. Sci 229, 472–475 (1990).

20 A. Harwit, C. Hsu, F. Agulló-Rueda, and L. L. Chang, "Observation of Miniband Formation in the CdTe/$Cd_{1-x}Mn_xTe$ Quantum Well System," Appl. Phys. Lett. 57, 1769–1771 (1990).

21 J. M. Hong, D. D. Awschalom, F. Agulló-Rueda, and L. L. Chang, "Novel properties of magnetic heterostructures by molecular beam epitaxy," J. Cryst. Growth 111, 1016–1023 (1991).

22 F. Agulló-Rueda, H. T. Grahn, A. Fischer, and K. Ploog, "Local origin of photocurrent in semiconductor superlattices," Phys. Rev. B (Rapid Communications) 45, 8818(R)–8821(R) (1992).

23 M. Carrascosa, F. Agulló-Rueda, and F. Agulló-López, "Steady holographic gratings in semiconductor multiple quantum wells," Appl. Phys. A 55, 25–29 (1992).

24 F. Meseguer, F. Agulló-Rueda, C. López, J. Sánchez-Dehesa, J. Massies, and A. M. Ceschin, "Lateral superlattice effects in very narrow strained semiconductor quantum wells grown on vicinal surfaces," Phys. Rev. B 47, 13 880–13 883 (1993).

25 J. Sánchez-Dehesa, J. A. Porto, F. Agulló-Rueda, and F. Meseguer, "Electronic energy levels of quantum well wires," J. Appl. Phys. 73, 5027–5031 (1993).

26 F. Agulló-Rueda, A. D'Intino, K. H. Schmidt, G. H. Döhler, H. T. Grahn, and K. Ploog, "Miniband formation at finite electric fields in a graded-gap superlattice," Europhys. Lett. 23, 283–288 (1993).

27 J. Martínez-Pastor, F. Agulló-Rueda, A. Vinattieri, F. Meseguer, J. Sánchez-Dehesa, M. Colocci, R. Mayoral, A. M. Ceschin, N. Grandjean, and J. Massies, "Localization in Highly Strained $In_{0.35}Ga_{0.65}As$/GaAs Ultrathin Quantum Wells," Superlattices & Microstructures 14, 39–47 (1993).

28 F. Agulló-Rueda, H. T. Grahn, and K. Ploog, "Nonthermal Occupation of Γ and X States in GaAs/AlAs Superlattices," Phys. Rev. B 49, 14 456–14 459 (1994).

29 H. T. Grahn, F. Agulló-Rueda, A. D'Intino, K. H. Schmidt, G. H. Döhler, and K. Ploog, "Miniband formation in graded-gap superlattices," Solid-State Electron. 37, 835–838 (1994).

30 O. Sánchez, C. Gómez-Aleixandre, F. Agulló, and J. M. Albella, "Study of the Plasma Discharges in Diamond Deposition with Different O_2 Concentrations," Diamond Relat. Mater. 3, 1183–1187 (1994).

31 J. Sánchez-Dehesa, F. Agulló-Rueda, J. Martínez-Pastor, A. Vinatieri, F. Meseguer, M. Colocci, R. Mayoral, J. A. Porto, C. López, A. M. Ceschin, N. Grandjean, and J. Massies, *Lateral localization in strained InGaAs/GaAs quantum wells*in *Formation of semiconductor interfaces*, (eds. B. Lengerer, H. Lüth, W. Mönch, and J. Pollmann) (World Scientific, Singapore, 1994), pp. 558–561.

32 N. V. Sochinskii, M. D. Serrano, E. Diéguez, F. Agulló-Rueda, U. Pal, J. Piqueras, and P. Fernández, "Effect of Thermal Annealing on Te Precipitates in CdTe Wafers Studied by Raman Scattering and Cathodoluminescence," J. Appl. Phys. 77, 2806–2808 (1995).

33 N. V. Sochinskii, E. Diéguez, U. Pal, J. Piqueras, P. Fernández, and F. Agulló-Rueda, "Elimination of Te Precipitates from CdTe Wafers," Semicond. Sci. Technol. 10, 870–875 (1995).

34 N. V. Sochinskii, E. Diéguez, E. Alves, M. F. da Silva, J. C. Soares, S. Bernardi, J. Garrido, and F. Agulló-Rueda, "Laser-Assisted Recrystallization to Improve the Surface Morphology of CdTe Epitaxial Layers," Semicond. Sci. Technol. 11, 248–251 (1996).

35 F. Agulló-Rueda, H. T. Grahn, and K. Ploog, "Wannier-Stark Localization in Asymmetric Double-Well Superlattices," J. Appl. Phys. (Communications) 79, 8106–8108 (1996).

36 J. D. Moreno, F. Agulló-Rueda, R. Guerrero-Lemus, R. J. Martín-Palma, J. M. Martínez-Duart, M. L. Marcos, and J. González-Velasco, *Deposition of polypyrrole into porous silicon*in *Advances in Microcrystalline and Nanocrystalline Semiconductors - 1996*, (eds. R. W. Collins, P. M. Fauchet, I. Shimizu, J. C. Vial, T. Shimada, and A. P. Alivisatos) (Materials Research Society, Pittsburgh, 1997), vol. 452, pp. 479–484.

37 F. Agulló-Rueda, J. D. Moreno, E. Montoya, R. Guerrero-Lemus, R. J. Martín-Palma, and J. M. Martínez-Duart, *Selection rules in the Raman spectrum of porous silicon*in *Advances in Microcrystalline and Nanocrystalline Semiconductors - 1996*, (eds. R. W. Collins, P. M. Fauchet, I. Shimizu, J. C. Vial, T. Shimada, and A. P. Alivisatos) (Materials Research Society, Pittsburgh, 1997), vol. 452, pp. 571–575.

38 A. de Andrés, F. Agulló-Rueda, S. Taboada, C. Cascales, J. Campá, C. Ruiz-Valero, and I. Rasines, "Raman Active Phonons of RFe$_3$(BO$_3$)$_4$ R=La or Nd Single Crystals," J. Alloys and Compounds 250, 396–399 (1997).

39 I. García, J. Sánchez Olías, F. Agulló-Rueda, and A. J. Vázquez, "Dielectric characterization of oxyacetylene flame-deposited diamond thin films," Diamond Relat. Mater. 6, 1210–1218 (1997).

40 N. Linder, U. Behn, F. Agulló-Rueda, H. T. Grahn, L. Schrottke, and K. H. Ploog, "Excitonic effects in the miniband formation of graded-gap superlattices," Phys. Rev. B 55, 15 720–15 726 (1997).

41 J. D. Moreno, F. Agulló-Rueda, E. Montoya, M. L. Marcos, J. González-Velasco, R. Guerrero-Lemus, and J. M. Martínez-Duart, "Depth-resolved micro-Raman study of porous silicon at different oxidation states," Appl. Phys. Lett. 71, 2166–2168 (1997).

42 J. Rams, F. Agulló-Rueda, and J. M. Cabrera, "Structure of High Index Proton Exchange $LiNbO_3$ Waveguides with Undegraded Nonlinear Optical Coefficients," Appl. Phys. Lett. 71, 3356–3358 (1997).

43 J. Mendiola, M. L. Calzada, P. Ramos, M. J. Martín, and F. Agulló-Rueda, "On the Effects of Stresses in Ferroelectric (Pb, Ca)TiO_3 Thin Films," Thin Solid Films 315, 195–201 (1998).

44 F. Agulló-Rueda, J. D. Moreno, E. Montoya, R. Guerrero-Lemus, and J. M. Martínez-Duart, "Influence of Wavelength on the Raman Line Shape in Porous Silicon," J. Appl. Phys. 84, 2349–2351 (1998).

45 A. A. Kaminskiĭ, S. N. Bagaev, J. García-Solé, H. J. Eichler, J. Fernández, D. Jaque, J. Findeisen, R. Balda, and F. Agulló-Rueda, "First Observations of Stimulated Emission and of Stimulated Raman Scattering in Accentric Cubic Nd^{3+}:$Bi_{12}SiO_{20}$ Crystals," Quantum Electronics 29, 6–8 (1999).

46 J. D. Moreno, M. L. Marcos, F. Agulló-Rueda, R. Guerrero-Lemus, R. J. Martín-Palma, J. M. Martínez-Duart, and J. González-Velasco, "A Galvanostatic Study of the Electrodeposition of Polypyrrole Into Porous Silicon," Thin Solid Films 348, 152–156 (1999).

47 A. de Andrés, J. L. Martinez, J. M. Alonso, E. Herrero, C. Prieto, J. A. Alonso, F. Agulló, and M. García-Hernandez, "Raman Phonons in Orthorhombic Manganites," J. Magn. Magn. Mater. 197, 453–454 (1999).

48 S. Manotas, F. Agulló-Rueda, J. D. Moreno, R. J. Martín-Palma, R. Guerrero-Lemus, and J. M. Martínez-Duart, "Depth-Resolved Microspectroscopy of Porous Silicon Multilayers," Appl. Phys. Lett. 75, 977–979 (1999).

49 M. Aguilar, M. Carrascosa, F. Agulló-López, F. Agulló-Rueda, M. R. Melloch, and D. D. Nolte, "Linear Electroabsorption in Semi-Insulating GaAs/AlGaAs Asymmetric Double Quantum Wells," J. Appl. Phys. 86, 3822–3825 (1999).

50 M. A. Bañares, J. H. Cardoso, F. Agulló-Rueda, J. M. Correa-Bueno, and J. L. G. Fierro., "Dynamic states of V-oxide species: reducibility and performance for methane oxidation on V_2O_5/SiO_2 catalysts as a function of coverage," Catal. Lett. 64, 191–196 (2000).

51 V. Bermúdez, D. Callejo, F. Caccavale, F. Segato, F. Agulló-Rueda, and E. Diéguez, "On the Compositional Nature of Bulk Doped Periodic Poled Lithium Niobate Crystals," Solid State Comm. 114, 555–559 (2000).

52 C. de las Heras and F. Agulló-Rueda, "Raman Spectroscopy of $NiSe_2$ and $NiS_{2-x}Se_x$ $(0 < x < 2)$ Thin Films," J. Phys. C: Condens. Matter 12, 5317–5324 (2000).

53 F. Agulló-Rueda, E. E. Mendez, B. Bojarczuk, and S. Guha, "Raman Spectroscopy of Wurtzite InN Films Grown on Si," Solid State Comm. 115, 19–21 (2000).

54 S. Manotas, F. Agulló-Rueda, J. D. Moreno, R. J. Martín-Palma, R. Guerrero-Lemus, and J. M. Martínez-Duart, "Depth-Resolved Microspectroscopy of Porous Silicon Multilayers," in *Optical Microstructural Characterization of Semiconductors - 1999*, (eds. M. S. Ünlü, J. Piqueras, N. M. Kalkhoran, and T. Sekiguchi), Materials Research Society (Materials Research Society, Pittsburgh, 2000), vol. 588, pp. 155–160.
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56 S. Manotas, F. Agulló-Rueda, J. D. Moreno, F. Ben-Hander, R. Guerrero-Lemus, and J. M. Martínez-Duart, "Laser Heating in Porous Silicon Studied by Micro-Raman Spectroscopy," Phys. Stat. Sol. (a) 182, 331–334 (2000).

57 R. Gago, I. Jiménez, D. Cáceres, F. Agulló-Rueda, T. Sajavaara, J. M. Albella, A. Climent-Font, I. Vergara, J. Räisänen, and E. Rauhala, "Hardening mechanisms in graphitic carbon nitride films grown with N_2/Ar ion assistance," Chem. Mater. 13, 129–135 (2001).

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