

CURRICULUM VITAE

Personal Information

Name : Jose Ordoñez Miranda
Date and place of birth : November 4, 1981, Tacna, Peru
Phone : (+33) 684 107141
E-mail : jose.ordonez@cnrs.pprime.fr
Affiliation : Institute Pprime (UPR 3346),
Centre National de la Recherche Scientifique (CNRS).
Address : 2 rue Pierre Brousse, TSA 41105 F86073,
Poitiers, Cedex 9

Education and Work

Studies/ Appointment	Institution	Research topic
Researcher (CR1*) (2015-Present)	Institute Pprime, CNRS	Heat Transport in Nanomaterials
Postdoctoral fellow (2013-2015)	Laboratory EM2C, Ecole Centrale Paris	Heat transport by surface phonon-polaritons
Postdoctoral fellow (2012)	CINVESTAV**, Merida, Mexico	Thermal characterization of nanocomposites
Ph.D. (2009-2011)	CINVESTAV, Merida, Mexico and University of Colorado, USA	Heat conduction in nanomaterials: Beyond the Fourier's law
Master (2006-2008)	CINVESTAV, Merida, Mexico	Modulated heat propagation in thin films
Bachelor (2000-2005)	UNJBG***, Tacna, Peru	Optimization of solar water heaters

* Chargé de Recherche de 1ère classe, ** Centro de Investigación y de Estudios Avanzados,
*** Universidad Nacional Jorge Basadre Grohmann.

Awards

- 2013** : Junior Prize of the IPPA, as an outstanding young researcher, China.
2013 : Prize IIM-UNAM to the best PhD thesis in science and engineering of
materials, México.

2012 : Prize Arturo Rosenblueth to the best PhD thesis in exact Sciences, México.
2011 : Award to the Academic Excellence, Cinvestav-Campus Mérida, México.
2010 : Conacyt Scholarship, University of Colorado at Boulder, USA.
2008-2011 : Conacyt Doctoral Scholarship, Cinvestav, Merida-Mexico.
2006-2008 : Conacyt Master Scholarship, Cinvestav, Merida-Mexico.
May 2004 : First-place Undergraduate Award at University Jorge Basadre.
2004 : Criscos Undergraduate Scholarship, University La Serena, Chile.
May 2003 : First-place Undergraduate Award at University Jorge Basadre.
May 2002 : First-place Undergraduate Award at University Jorge Basadre.
May 2001 : First-place Undergraduate Award at University Jorge Basadre.
May 2000 : First-place Undergraduate Award at University Jorge Basadre.

Academic Scores (Scoring system from 0 to 10)

Score of my Master studies : 9.9

Score of my Ph.D. studies : 10

Scientific Responsibilities

- **Supervisor** of 3 theses and 2 master trainees since 2014.
- **Participation** in the ANR project CarISOVERRE and three big European projects: Nanotherm, Nanoteg and Euphonon.
- **Ad hoc reviewer** of 16 articles from 11 scientific journals, such as Nature (1), Phys. Rev. Lett. (2), J. Appl. Phys. (6), J. Heat Transport (1), etc.

Book Chapter

J. Ordonez-Miranda, R. Yang, and J. J. Alvarado-Gil, Thermal Conductivity of Particulate Nanocomposites, in **Nanoscale Thermoelectrics** of the Springer series "Lecture Notes on Nanoscale Science and Technology", edited by Xiaodong Wang and Zhimin Wang.

Journal Publications

2017

54. **J. Ordonez-Miranda**, Y. Ezzahri, J. Drevillon and K. Joulain, Polaritonic Figure of Merit of Plane Structures, Phys. Rev. B. (**Accepted**).
53. S. M. Sajadi, **J. Ordonez-Miranda**, J. M. Hill, Y. Ezzahri, K. Joulain and H. Ghasemi, Invariant for One-Dimensional Heat Conduction in Dielectrics and Metals, J. Heat Transfer (**Accepted**).

52. **J. Ordonez-Miranda**, Y. Ezzahri and K. Joulain, Quantum Thermal Diode Based on two Interacting Spinlike Systems under Different Excitations, *Phys. Rev. E* **95**, 022128 (2017).
51. Y. Ezzahri, **J. Ordonez-Miranda** and K. Joulain, Heat Transport in Semiconductor Crystals under Large Temperature Gradients, *Int. J. Heat Mass Transfer* **108**, 1357 (2017).
50. C. L. Gomez-Heredia, J. Macias, **J. Ordonez-Miranda**, O. Ares and J. J. Alvarado-Gil, Diffusive-to-Ballistic Transition of the Modulated Heat Transport in a Rarefied Air Chamber, *AIP Advances* **7**, 015032 (2017).
49. D. D. Markushev, **J. Ordonez-Miranda**, M.D. Rabasovic, M. Chirtoc, D. M. Todorovic, S. E. Bialkowski, D. Korte and M. Franko, Thermal and Elastic Characterization of Glassy Carbon Thin Films by Photoacoustic Measurements, *Eur. Phys. J. Plus*, **132**, 33 (2017).
48. **J. Ordonez-Miranda**, K. Joulain and Y. Ezzahri, Thermal Conductance of a Surface Phonon-Polariton Crystal Made up of Polar Nanorods, *A J. Phys. Sci.(ZNA)* **72**, 1 (2017).

2016

47. **J. Ordonez-Miranda**, Y. Ezzahri, J. Drevillon and K. Joulain, Transistor-like Device for Heating and Cooling, *Phys. Rev. Applied* **6**, 054003 (2016).
46. **J. Ordonez-Miranda**, M. Hermens, I. Nikitin, V. G. Kouznetsova, O. van der Sluis, J. S. Reparaz, C. M. Sotomayor Torres and S. Volz, Measurement and Modeling of the Effective Thermal Conductivity of Sintered Silver Pastes, *Int. J. Therm. Sci.* **107**, 1053 (2016).
45. S. Volz, **J. Ordonez-Miranda**, A. Shchepetov, M. Prunnila, J. Ahopelto, T. Pezeril, G. Vaudel, V. Gusev, P. Ruello, E. M. Weig, M. Schubert, M. Hettich, M. Grossman, T. Dekorsy, F. Alzina, B. Graczykowski, E. Chavez-Angel, J. S. Reparaz, M. R. Wagner, C. M. Sotomayor-Torres, S. Xiong, S. Neogi and D. Donadio, Nanophononics: state of the art and perspectives, *Eur. Phys. J. B* **89**, 15 (2016).
44. **J. Ordonez-Miranda**, Y. Ezzahri, J. Drevillon and K. Joulain, Dynamical Heat Transport Amplification in a Far-Field Thermal Transistor of VO₂ Excited with a Laser of Modulated Intensity, *J. Appl. Phys.*, **119**, 053507 (2016).
43. H. Prod'Homme, **J. Ordonez-Miranda**, J. Drevillon, Y. Ezzahri and K. Joulain, Optimized thermal amplification in a radiative transistor, *J. Appl. Phys.*, **119**, 052802 (2016).
42. K. Joulain, J. Drevillon, Y. Ezzahri and **J. Ordonez-Miranda**, Quantum thermal transistor, *Phys. Rev. Lett.*, **90**, 1045 (2016).

41. **J. Ordonez-Miranda**, L. Tranchant, K. Joulain, Y. Ezzahri, J. Drevillon and S. Volz, Thermal Energy Transport in a Surface Phonon-Polariton Crystal, *Phys. Rev. B*, **93**, 035428 (2016).

2015

40. **J. Ordonez-Miranda**, L. Tranchant, S. Gluchko and S. Volz, Energy Transport of Surface Phonon-Polaritons Propagating along a Chain of Spheroidal Nanoparticles, *Phys. Rev. B*, **92**, 115409 (2015).
39. **J. Ordonez-Miranda**, R. Yang, S. Volz and J. J. Alvarado-Gil, Steady State and Modulated Heat Conduction inside a Layered System Predicted by the Phonon Boltzmann Transport Equation, *J. Appl. Phys.*, **118**, 075103 (2015).
38. S. Gluchko, **J. Ordonez-Miranda**, L. Tranchant, T. Antoni and S. Volz, Focusing of Surface Phonon-Polaritons along Conical and Wedge Polar Nanostructures, *J. Appl. Phys.*, **118**, 064301 (2015).
37. D. D. Markushev, **J. Ordonez-Miranda**, M. D. Rabasovic, S. Galovic, D. M. Todorovic and S. E. Bialkowski, Effect of the absorption coefficient of aluminium plates on their thermoelastic bending in photoacoustic experiments, *J. Appl. Phys.*, **117**, 245309 (2015).
36. J. Jaramillo-Fernandez, **J. Ordonez-Miranda**, E. Ollier and S. Volz, Tunable thermal conductivity of thin films of polycrystalline AlN by structural inhomogeneity and interfacial oxidation, *Phys. Chem. Chem. Phys.*, **17**, 8125 (2015).
35. **J. Ordonez-Miranda** and R. Yang, Effect of a metallic coating on the thermal conductivity of carbon nanofiber dielectric matrix composites, *Compos. Sci. Technol.*, **109**, 18 (2015).

2014

34. **J. Ordonez-Miranda**, L. Tranchant, S. Gluchko, T. Antoni and S. Volz, Fresnel-like Formulas for the Reflection and Transmission of Surface Phonon-Polaritons at a Dielectric Interface, *Phys. Rev. B*, **90**, 155416 (2014).
33. **J. Ordonez-Miranda**, L. Tranchant, B. Kim, Y. Chalopin, T. Antoni and S. Volz, Quantized Thermal Conductance of Nanowires at Room Temperature due to Zenneck Surface-Phonon Polaritons, *Phys. Rev. Lett.*, **112**, 055901 (2014).
32. **J. Ordonez-Miranda**, L. Tranchant, Y. Chalopin, T. Antoni and S. Volz, Thermal conductivity of nano-layered systems due to surface-phonon polaritons, *J. Appl. Phys.*, **115**, 054311 (2014).
31. **J. Ordonez-Miranda**, L. Tranchant, B. Kim, Y. Chalopin, T. Antoni and S. Volz, Effects of anisotropy and size of polar nano thin films on their thermal conductivity due to surface-phonon polaritons, *Appl. Phys. Express*, **7**, 035201 (2014).

30. J. D. Macias, **J. Ordonez-Miranda**, F. I. Lizama-Tzec, O. Arés, J. Bante-Guerra, G. Oskam, R. de Coss and J. J. Alvarado-Gil, Photothermal Determination of Infrared Emissivity of Selective Solar Absorbing Coatings, *Int. J. Thermophys.*, **36**, 1051 (2015).
29. **J. Ordonez-Miranda**, J. J. Alvarado-Gil and R. Yang, Crowding factor model for the thermal Conductivity of Composites at Non-Dilute Limit, *J. Appl. Phys.*, **114**, 064306 (2013).
28. J.J. Alvarado-Leaños, **J. Ordonez-Miranda** and J. J. Alvarado-Gil, Thermal Resistance Formulation of Fourier Equation and its Application in the Study of Inhomogeneous Materials and Inverse Problems, *Int. J. Thermophys.*, **34**, 1167 (2013).
27. **J. Ordonez-Miranda**, L. Tranchant, T. Tokunaga, B. Kim, B. Palpant, Y. Chalopin, T. Antoni and S. Volz, Anomalous Thermal Conductivity by Surface Phonon-Polaritons of Polar Nano Thin Films due to their Asymmetric Surrounding Media, *J. Appl. Phys.*, **113**, 084311 (2013).
26. **J. Ordonez-Miranda** and J. J. Alvarado-Gil, Effect of the Electron-Phonon Coupling on the Effective Thermal Conductivity of Metallic Bilayers, *Int. J. Thermophys.*, **33**, 2243 (2012).

2012

25. J. D. Macias, **J. Ordonez-Miranda** and J. J. Alvarado-Gil, Resonance frequencies and Young's modulus determination of magnetorheological elastomers using the photoacoustic technique, *J. Appl. Phys.*, **112**, 124910 (2012).
24. **J. Ordonez-Miranda** and J. J. Alvarado-Gil, Thermal quadrupole method applied to flat and spherical semi-transparent multilayers heated up with a modulated laser beam, *J. Appl. Phys.*, **112**, 114902 (2012).
23. C. Valez-Pinzon, **J. Ordonez-Miranda** and J. J. Alvarado-Gil, Thermal Characterization of Materials using Characteristic Frequencies of a Normalized Thermal Spectra, *J. Appl. Phys.*, **112**, 064909 (2012).
22. **J. Ordonez-Miranda**, J. J. Alvarado-Gil and R. Yang, Effective Thermal Conductivity of Metal-Dielectric Composites at the Non-Dilute Limit, *Int. J. Thermophys.*, **33**, 2118 (2012).
21. **J. Ordonez-Miranda** and J. J. Alvarado-Gil, Effect of the Pore Shape on the Thermal Conductivity of Porous Media, *J. Mater. Sci.*, **47**, 6733 (2012).
20. M. A. Zambrano-Arjona, **J. Ordonez-Miranda**, R. A. Medina-Esquivel, F. Peñuñuri, P. Martinez and J. J. Alvarado-Gil, Effect of the Multiple Reflections of a Light Beam Excitation on the Thermal Wave Field of a Sample of Finite Thickness, *J. Appl. Phys.*, **111**, 094915 (2012).
19. R. A. Medina-Esquivel, M. A. Zambrano-Arjona, J. A. Mendez-Gamboa, J.M. Yanez-Limon, **J. Ordonez-Miranda** and J. J. Alvarado-Gil, Thermal Characterization of

Composites Made up of Magnetically Aligned Carbonyl Iron Particles in a Polyester Resin Matrix, *J. Appl. Phys.*, **111**, 054906 (2012).

18. **J. Ordonez-Miranda** and J. J. Alvarado-Gil, Thermal Conductivity of Nanocomposites with High Volume Fractions of Particles, *Compos. Sci. Technol.*, **72**, 853 (2012).
17. **J. Ordonez-Miranda**, R. Yang and J. J. Alvarado-Gil, A Model for the Effective Thermal Conductivity of Metal-Nonmetal Particulate Composites, *J. Appl. Phys.*, **111**, 044319 (2012).
16. **J. Ordonez-Miranda** and J. J. Alvarado-Gil, Determination of thermal properties for hyperbolic heat transport using a frequency-modulated excitation source, *Int. J. Eng. Sci.*, **50**, 101 (2012).

2011

15. **J. Ordonez-Miranda**, R. Yang and J. J. Alvarado-Gil, On the Thermal Conductivity of Particulate Nanocomposites, *Appl. Phys. Lett.*, **98**, 233111 (2011).
14. **J. Ordonez-Miranda**, R. Yang and J. J. Alvarado-Gil, The Effect of the Electron-Phonon Coupling on the Effective Thermal Conductivity of Metal-Nonmental Multilayers, *J. Appl. Phys.*, **109**, 094310 (2011).
13. **J. Ordonez-Miranda**, R. Yang and J. J. Alvarado-Gil, A Constitutive Equation for Nano-to-Macro-Scale Heat Conduction Based on the Boltzmann Transport Equation, *J. Appl. Phys.*, **109**, 084319 (2011).
12. **J. Ordonez-Miranda** and J. J. Alvarado-Gil, Effective Thermal Properties of Layered Systems under the Parabolic and Hyperbolic Heat Conduction Models Using Pulsed Heat Sources, *J. Heat Transfer*, **133**, 091301 (2011).
11. **J. Ordonez-Miranda** and J. J. Alvarado-Gil, On the stability of the exact solutions of the dual-phase lagging model of heat conduction, *Nanoscale Res. Lett.*, **6**, 327 (2011).

2010

10. **J. Ordonez-Miranda** and J.J. Alvarado-Gil, Frequency-modulated Hyperbolic Heat Transport and Effective Thermal Properties in Layered Systems, *Int. J. Therm. Sci.*, **49**, 209 (2010).
9. **J. Ordonez-Miranda**, Miguel A. Zambrano-Arjona and J.J. Alvarado-Gil, Hamilton-Jacobi and Quantum Theory Formulations of ThermalWave Propagation under the Dual-Phase Lagging Model of Heat Conduction, *J. Math. Phys.*, **51**, 023506 (2010).
8. **J. Ordonez-Miranda** and J.J. Alvarado-Gil, Effective Thermal Properties of Multilayered Systems with interface thermal Resistance in a Hyperbolic Heat Transfer Model, *Int. J. Thermophys.*, **31**, 900 (2010).
7. **J. Ordonez-Miranda** and J.J. Alvarado-Gil, Generalized Bruggeman Formula for the Effective Thermal Conductivity of Particulate Composites with an Interface Layer, *Int. J. Thermophys.*, **31**, 975 (2010) .

6. **J. Ordonez-Miranda** and J. J. Alvarado-Gil, Exact Solution of the Dual-Phase-Lag Heat Conduction Model for a One-Dimensional System Excited with a Periodic Heat Source, *Mech. Res. Commun.*, **37**, 276 (2010).
5. **J. Ordonez-Miranda** and J. J. Alvarado-Gil, Thermal Characterization of Granular Materials using a Thermal-wave Resonant Cavity under the Dual-Phase Lag Model of Heat Conduction, *Granular Matter*, **12**, 569 (2010).
4. **J. Ordonez-Miranda** and J.J. Alvarado-Gil, Determination of Time-delay Parameters in Dual-Phase Lagging Heat Conduction Model, *J. Heat Transfer*, **132**, 061302 (2010).
3. L. Vilca-Quispe, J.J. Alvarado-Gil, P. Quintana and **J. Ordonez-Miranda**, Diffusion of Methylene Blue in Phantoms of Agar Using a Photoacoustic Technique, *Int. J. Thermophys.*, **31**, 987 (2010).
2. J. May-Crespo, P. Martinez-Torres, J.J. Alvarado-Gil, P. Quintana and **J. Ordonez-Miranda**, Water Transport Monitoring in Calcium Carbonate Stones by Photoacoustic Spectroscopy, *Int. J. Thermophys.*, **31**, 1027 (2010).

2009

1. **J. Ordonez-Miranda** and J.J. Alvarado-Gil, Thermal Wave Oscillations and Thermal Relaxation Time Determination in a Hyperbolic Heat Transport Model, *Int. J. Therm. Sci.*, **48**, 2053 (2009).

Manuscript under Review

1. **J. Ordonez-Miranda**, Y. Ezzahri, and K. Joulain, Modeling of the Thermal Hysteresis of Materials with a Dielectric-Metal Transition.

Manuscript in Preparation

1. **J. Ordonez-Miranda** and R. Yang, On the Thermal Conductivity of Nano Aerogels.

Conferences

24. **XXV International Materials Research Congress** (Cancun, Mexico, August, 2016)
Thermal Energy Transport in a Surface Phonon-Polariton Crystal (**Invited talk**)
23. **Sinapsis**, (Paris, France, July, 2016)
Photon Thermal Transistor (**Invited talk**)
22. **WE-Heraeus Seminar: Heat Transfer and Heat Conduction on the Nanoscale**, (Bad honnef, Germany, April, 2016)
Thermal energy transport in a surface phonon-polariton Crystal.

21. **Nanowires 2015**, (Barcelona, Spain, October, 2015)
Heat Transport in Nanowires Supporting the Propagation of Polaritons and Phonon (**Invited talk**).
20. **THERMINIC**, (Paris, France, September, 2015)
 - Determination of the Phonon Mean Free Path of Dielectric Thin Films.
 - Thermal Conductivity of Polycrystalline AlN Films.
 - Thermal Energy Transport in a Surface Phonon-Polariton Crystal.
19. **XVIII International Conference on Photoacoustic and Photothermal Phenomena (ICPPP18)**, (Novi Sad, Serbia, September, 2015)
Mean Free Path of Air Molecules inside a TWRC Embedded in a Vacuum Chamber (**Invited talk**).
18. **E-MRS Fall Meeting & Exhibit**, (Warsaw, Poland, September, 2015)
Figure of Merit of Surface Phonon-Polaritons (**Invited talk**).
17. **Phonons 2015**, (Nottingham, United Kingdom, July, 2015)
Thermal Energy Transport in a Surface Phonon-Polariton Crystal.
16. **Phononics 2015**, (Paris, France, June, 2015)
Energy Transport of Surface Phonon-Polaritons along Chains of Polar Nanoparticles.
15. **MRS 2015, Spring Meeting & Exhibit**, (San Francisco, CA, USA, April, 2015)
Heat Transport along Nanofilms and Nanowires due to Surface Phonon-Polaritons.
14. **3rd Mediterranean International Workshop on Photoacoustic & Photothermal Phenomena**, (Erice, Italy, October, 2014)
Microscopic Description of Ultrafast Photothermal Phenomena in Dielectric Nanofilms (**Invited talk**).
13. **THERMINIC**, (London, United Kingdom, September, 2014)
Modeling of the Effective Thermal Conductivity of Sintered Porous Pastes.
12. **II Conference on Photoacoustic and Photothermal Theory and Applications (CPPTA)**, (Warsaw, Poland, September, 2014)
Microscopic Description of Photothermal Phenomena in Dielectric Nanofilms (**Invited talk**).
11. **EUPHONON Workshop**, (Le Mans, France, September 2014)
Heat Transport along Nanofilms and Nanowires due to Surface Phonon-Polaritons.
10. **E-MRS 2014 Spring Meeting & Exhibit**, (Lille, France, May, 2014)
 - Heat Transport along Nanofilms and Nanowires due to Surface Phonon-Polaritons.
 - Ultrafast Modulated Heating of a Nanofilm Predicted by the Phonon Boltzmann Transport Equation.

9. **XVII International Conference on Photoacoustic and Photothermal Phenomena (ICPPP17)**, (Suzhou, Jiangsu, China, October, 2013)
 - Modeling of the Nanoscale Dynamics of Phonons and Phonon-Polaritons in Nanoengineered Materials: Photothermal Approach.
 - Temperature Profile in Layers Predicted by the Boltzmann Transport Equation.
 - Infrared emissivity determination of selective solar absorbing coatings.
8. **MRS Spring Meeting & Exhibit**, (San Francisco, CA, USA, April, 2013)
Anomalous Thermal Conductivity of Amorphous Nano-sized Thin Films and Tubes due to Surface Phonon-Polaritons.
7. **Eighteenth Symposium on Thermophysical Properties**, (Boulder, CO, USA, June, 2012)
Crowding Factor Model for the Thermal Conductivity of Particulate Nanocomposites: Comparison between Experiment and Theory.
6. **International School of Quantum Electronics**, Second Mediterranean International Workshop on Photoacoustic and Photothermal Phenomena: Focus on BIOMEDICAL and NANOSCALE IMAGING and NDE (Erice-Sicily, Italy, April, 2012)
Thermal Conductivity of Particulate Nanocomposites and Porous Media: Comparison between Experiment and Theory.
5. **Sixteenth International Conference on Photoacoustic and Photothermal Phenomena** (Mérida, Yucatán, México, November, 2011)
 - Effect of the Electron-Phonon Coupling on the Effective Thermal Conductivity of Metallic Bilayers.
 - Effective Thermal Conductivity of Metal-Dielectric Composites at the Non-Dilute Limit.
 - Determination of the Relaxation Time and Interface Reflectivity Based on the Phonon Boltzmann Transport Equation.
4. **XX International Materials Research Congress** (Cancun-Mexico, August, 2011)
A Model for the Thermal Conductivity of Nanocomposites with high volume fractions of Particles.
3. **Southern Workshop on Granular Materials** (Viña del Mar-Chile, December, 2009)
Thermal Characterization of Granular Materials using a Thermal-Wave Resonant Cavity under the Dual-Phase Lag Model of Heat Conduction.
2. **Seventeenth Symposium on Thermophysical Properties** (Boulder, CO, USA, June, 2009)
 - Effective Thermal Properties of Multilayered Systems with Interface Thermal Resistance in a Hyperbolic Heat Transfer Model.

- Modified Bruggeman Model for the Effective Thermal Conductivity of Particulate Composites with Interfacial Thermal Resistance.
1. **XVII International Materials Research Congress** (Cancun, Mexico, August 2008)
High-Frequency Propagation of Thermal Waves in Multilayered Systems.

Invited Stay

Universidad Nacional de Colombia (Manizales-Colombia, December 07-20 2011)

Skills

Problem Solving

Professional academic training to develop theoretical models for explaining experimental data of transport phenomena. Good analytical and logical reasoning skills. I am able to multitask, work within a group environment, and learn new skill quickly.

Languages

- Native language: Spanish.
- Foreign languages: Professional mastery in English and French.

Computer Software

Professional expertise with the MS Office package, Mathematica, MatLab, OriginLab, Latex, C++, and Fortran.

References of Jose Ordonez Miranda

1. Dr. Sebastian Volz

E-mail: sebastian.volz@centralesupelec.fr
Laboratoire EM2C, CNRS
Ecole CentraleSupélec, Châtenay-Malabry, France
Phone: (+33) 141 131070

2. Prof. Ronggui Yang

E-mail: ronggui.yang@colorado.edu
Department of Mechanical Engineering
University of Colorado at Boulder-USA
Phone: (+1) 303 7351003

3. Prof. Juan Alvarado Gil

E-mail: jjag@mda.cinvestav.mx
Department of Applied Physics
Cinvestav, Merida-Mexico
Phone: (+521) 9992 073853