



# **CURRICULUM**

# **VITAE**

# *Dr. Francisco C. Robles Hernández*

Associate Professor  
Mechanical Engineering Technology and Materials Science Departments  
University of Houston, College of Technology  
304 Technology Building, Houston TX, 77204-4020  
<http://www.tech.uh.edu/directory/Robles-Hernandez/Francisco/>

## **Education**

University of Windsor: Ph.D. in Materials Science and Engineering 2004  
**Dissertation:** Improvement of the Functional Characteristics of the Al-Si Cylinder Liners through the Utilization of Melt Treatment with the Novel Electromagnetic Technology

Instituto Politécnico Nacional: Master in Materials Science and Engineering 1999  
**Thesis:** Production and Characterization of Composites Metal-C (where Metal= Fe or Al and C= Graphite or Fullerene) Obtained from Mechanically Alloyed Powders

Instituto Politécnico Nacional: B.Sc. in Metallurgy, Mats. Sci. and Eng. 1996

## **Work Experience**

### University of Houston

Associate Professor	2014 to date
Member of the Center of Advanced Materials (CAM)	2013 to date
MS Program Coordinator (Technology Department)	2009 to 2014
Assistant Professor (Technology Department)	2008 to 2014

### Transportation Technology Center Incorporated (TTCI)

Principal Investigator/Project Manager 2005 - 2008  
TTCI is the most advanced research large scale facility for the railroad industry and transit. Duties related to materials characterization, testing and physical metallurgy.

### NSERC/FORD-NEMAK/University of Windsor IRC

Research Assistant 2000 - 2004  
Cause root failure, mechanical testing, materials characterization, casting of light metal alloys. Design of prototype engine block for the V6-FORD engine. Extensive work in Chromatography (ICP-OES, ICP-MS, AA), metallography, crystallography, etc.

### IPN/Centre for Processing of Minerals and Advanced Materials

Research Assistant 1997 - 1999  
Laboratory dedicated to solve industrial problems through the use of state-of-the-art Materials Science methods. Additionally, I was involved in the operation and use of electron microscopy including scanning, transmission and Auger.

## Accomplishments

- Grant funding as a PI: approximately 3 MUSD,
  - Approximately \$ 500,000 while at the University of Houston
    - \$ 185,000 is the Startup Funds from the College of Technology and the University of Houston,
  - Approximately \$ 2,500,000 at the Transportation Technology Center, Inc.
- Best paper award at the International Heavy Haul Association in Shanghai, China, June 22-25, 2009,
  - The manuscript and presentation was based on work conducted at the Transportation Technology Center, Inc., the manuscript and presentation were made while at the University of Houston,
- Keynote Speaker: SAIMM-South Africa, Magaliesburg 2012,
- Key Note Article: Metallurgy of High Carbon Steels for Railroad Applications, SAIMM-South Africa, Magaliesburg 2012,
- Keynote Speaker: “V Congreso Internacional de Metalurgia y Materiales”, Mexico, Monclova Coah. 2011,
- Graduate supervisor in 9 MS thesis,
- Three graduate (Master of Science (MS)) thesis completed, two expected for 2013,
- Restart the MS program in Mechanical Engineering Technology at the College of Technology in 2009,
- MS Program Coordinator (graduate advisor) from 2009 through 2014,  
*Note: before 2009 the Department of Mechanical Engineering Technology at the College of Technology did not have a graduate program. Currently the terminal degree is MS and there is no Doctorate (e.g. PhD) degree yet,*
- Invited to join the Center for Advanced Materials at UH in 2013,
- 180+ publications (journals, conferences, proceedings, reports, patents, etc.),
- Two patents for steel design approved, one patent submitted, not approved,
  - The patents were filed while at the Transportation Technology Center, Inc. and granted while I was at the University of Houston.
  - One provisional patent in process,
  - Two in process,
- Google Scholar: 67 documents with 357 citations, H factor = 14,
- Scopus: 55 documents with more than 400 citations, H factor = 11,
- Reviewer for 20+ journals,
- Editor of the IMRS conference proceedings book edited by MRS,
- Research collaborations in 6 countries and more than 20 distinguished institutes,
- Supervise professionals with different backgrounds, from PhD to technician level,
- Report writing for a materials failure used in a multimillion dollar litigations,
- Awards (scholarships, fellowships, prizes, etc.) for more than 120,000 USD,
  - Those awards were given during my studies from bachelors to PhD degrees,
- Reviewer for four international Science Agencies (Romania, Netherlands, and USA),

### **Professional Associations**

- The Minerals, Metals and Materials Society (TMS),
- American Chemical Society (ACS),
- Materials Research Society (MRS),
- American Society of Mechanical Engineers (ASME),
- The American Standard Testing Materials (ASTM),
- American Society of Metals (ASM),
- The American Railway Engineering and Maintenance of Way Association (AREMA)

# 1. Teaching and Student Learning

## a. Courses Taught

Catalogue	Description
MECT 4372	Materials Technology*
MECT 4172	Materials Technology Lab*
MECT 3355	Strength Materials Lab*
MECT 4341	Materials Selection and Management*
MECT 4398	Special Problems (Independent Study)*
MECT 4343	Thermomechanical Processing of Materials*
MECT 6340	Materials Selection and Management‡
MECT 6342	Thermomechanical Processing of Materials ‡
MECT 6397	Sel Tops-Manufacturng Sys Tech (Independent Study)‡
MECT 6399	Thesis‡
MECT 6370	Research and Applications in Manufacturing‡
MECT 6396	Master's Project‡
* Undergraduate course	
‡ Graduate course	

**b. Graduate Advising Participation in the MS program**

Student	Thesis	Grade	Year
A. D. K. P. Savio*‡	Characterization Protocol for Titanium dioxide (Anatase: Rutile) Use for Photocatalytic Applications	M.Sc.	2011
D. A. Barber*‡	Cost-Effective Thermomechanical Synthesis and Characterization of Complex Carbon Nanostructures for Structural Applications	M. Sc.	2013
D. A. Barber*‡	categorizing the process that produced particular structures	M. Sc.	2013
F. Cortes Vega†	Synthesis and Characterization of Doped Alumina with Cr <sup>+3</sup> Ions and Reinforced Using sp <sup>2</sup> bonded Carbon Nanostructures	Ph.D.	2016
O. A. Herrera Sanchez†	Synthesis of Al6061-Carbon Fibers and its numerical and experimental analysis	M. Sc.	2015
A. Okonkwo*‡	Engineering Carbon Nanostructures in Solid State	M. Sc.	2014
A. Okonkwo*‡	Laser Processing to Improve Track Safety, Ridership Safety and Efficiency	M. Sc.	2014
O. Eytayo M.*	Growth and Synthesis of Carbon Nanotubes by Chemical Vapor Distribution on Alumina Substrates and their Reinforcing Effect for Structural Composites	M. Sc.	2015
J. Nguyen*†	Prevalence of Carbon Nanotubes in Irradiated Foods and the Potential Impact on Health	M.Sc.	2015
A. Reddy Erra†	Carbon nanostructures for highly efficient rechargeable batteries.	M.S.	2015
A. Tejada Ochoa†	Synthesis of Silicate from Soils Rich in SiO <sub>2</sub> for Applications as Geopolymers	M.S.	2015
I. Estrada Guel	Synthesis and characterization of nanostructured particles and its dispersion as effective reinforcements for composites	Post-Doct.	2015
* Direct supervisor ‡ Degree completed † Students supervised in collaboration			

**c. Other Evidence of Teaching, Student Learning, and the Scholarship of Teaching**

Student	Background	Degree Graduation	Publications	Currently at
U. Aldea	Hispanic	BS/2011	1 Journal and 1 conference	Peru
A. Abana	African American	BS/2011	Acknowledge in 1 Journal	Halliburton, PA
D. Barber	White	MS/2012	8 conference, 2 paper (1 in progress), 2 <sup>nd</sup> place at the research day at COT.	Oil industry, TX
C. Brysch <sup>†††</sup> A. Ulmet <sup>†††</sup> , E. Wold <sup>†††</sup>	White White White	BS/2012 BS/2014 BS/2014	1 proceeding, 1 conference, 1 paper submitted	UH-Technology
S. Daley <sup>1</sup>	White	BS/2011	1 journal in progress	SMC Ltd., MN
J Fletcher	Mix	BS/2011	2 papers, 1 conference	Oil industry, TX
C. Mandival	Hispanic	BS/2014	2 conferences, 2 papers <sup>3</sup>	UH
F. Perez	Hispanic	BS/2014	2 conferences, 2 papers <sup>3</sup>	UH/Oil Industry
O. Hecht	Hispanic	BS/2014	2 conferences, 2 papers <sup>3</sup>	UH/Oil Industry
A. Fals	Hispanic	MS/2012	6 conferences (2 invited), 3 papers, 2 <sup>nd</sup> place at the research day at COT.	Oil industry, TX
M. Mohamed <sup>2</sup>	Arab	BS/2012	1 poster: best paper award	PhD at UH
J. Nguyen	Asian	MS/2015	In progress	UH
T. Obiri	African American	MS/2015	In progress	UH
A. Okonkwo	African American	MS/2014	4 conferences, 2 papers (1 submitted, 1 in progress), 2 <sup>nd</sup> place at the research day at COT.	UH
D. Pepe	White	BS/2012	1 paper	Oil industry, TX
J. Quintero	Hispanic	BS/2011	3 papers (1 invited), 4 conferences (2 invited)	General Electric
T. K. Yelamarthi	Indian	MS/2012	N/A	Engineering, UH
A. P. D. Savio	Indian	MS/2011	3 Papers (1 submitted), 3 conferences	Oil industry, TX
I. D. Weerasinghe	Sri Lanka	MS/2012	1 conference, 1 paper	UH
A. O. Okonkwo	Nigeria	MS/2014	7 conferences, 4 papers	UH
E. Obiry	Nigeria	MS/2014	3 conferences <sup>3</sup> , 2 papers <sup>3</sup>	UH/Exxon
J. Nguyen <sup>4</sup>	Asian	MS/2014	2 Conferences, 2 papers <sup>3</sup>	UH

<sup>1</sup> REU exchange student from University of Wisconsin at Stout, Summer 2011,

<sup>2</sup> Students in collaborative work with Dr. J. F. Eberth, College of Technology

<sup>3</sup> Work in progress

<sup>4</sup> Students in collaborative work with Dr. R. Lee and J. Neal

## **Research Grants Since 2005 – Total Grant Budget 4+ MUSD**

1. PI: Francisco C. Robles Hernandez, Title: Rail Base Corrosion, Sponsor: National Academy of Science, Budget: \$ 75,000, Period: 2005-2006.
2. PI: Francisco C. Robles Hernandez, Title: Advanced Rail Steel, Sponsor: Fed. Railroad Admin., Budget: \$ 180,000, Period: 2005-2006.
3. PI: Francisco C. Robles Hernandez, Title: Advanced Rail Welding, Sponsor: Association of American Railroads, Budget: \$ 250,000, Period: 2005-2006
4. PI: Francisco C. Robles Hernandez, Title: Advanced Rail Welding, Sponsor: Assoc. of American Railroads, Budget: \$ 250,000, Period: 2006-2007.
5. PI: Francisco C. Robles Hernandez, Title: Advanced Rail Steels, Sponsor: Association of American Railroads, Budget: \$ 168,000, Period: 2006-2007.
6. PI: Francisco C. Robles Hernandez, Title: Strategies to Prevent Wheel Failure, Sponsor: Association of American Railroads, Budget: \$ 250,000, Period: 2006-2007.
7. PI: Francisco C. Robles Hernandez, Title: Advanced Rail Steels, Sponsor: Association of American Railroads, Budget: \$ 178,000, Period: 2007-2008.
8. PI: Francisco C. Robles Hernandez, Title: Strategies to Prevent Wheel Failure, Sponsor: Association of American Railroads, Budget: \$ 350,000, Period: 2007-2008.
9. PI: Francisco C. Robles Hernandez, Title: Advanced Rail Steels, Sponsor: Association of American Railroads, Budget: \$ 190,000, Period: 2008-2009
10. PI: Francisco C. Robles Hernandez, Title: Strategies to Prevent Wheel Failure, Sponsor: Association of American Railroads, Budget: \$ 350,000, Period: 2008-2009.
11. PI: Francisco C. Robles Hernandez, Title: Rail Base Corrosion Phase II, Sponsor: National Academy of Science, Budget: \$ 80,000, Period: 2008-2009.
12. PI: Francisco C. Robles Hernandez, Title: Completion of the 2008 Tasks for the Strategy Research Initiatives (SRI) 8 C and 11 A, Sponsor: Transportation Technology Center, Inc., Budget: \$ 15,000, Period: 2008-2009.
13. PI: Francisco C. Robles Hernandez, Title: Development of a Thermal Analysis Workstation for On-Line Screening for Mid and High Carbon Steels, Sponsor: University of Houston, Budget: \$ 6,000, Period: 2009-2010.
14. PI: Francisco C. Robles Hernandez, Title: SEM analysis of samples from railroad bearings, Sponsor: Transportation Technology Center, Inc., Budget: \$ 1,400, Period: 2009.
15. PI: Francisco C. Robles Hernandez, Title: SEM Analysis of the Shelling in Thermite Welds and Shelling in Rail, Sponsor: Transportation Technology Center, Inc., Budget: \$ 2,600, Period: 2009.
16. PI: Francisco C. Robles Hernandez, Title: SEM Analysis of the Shelling Observed on Railroad Wheel Flanges Phases I-III, Sponsor: Transportation Technology Center, Inc., Budget: \$ 7,600, Period: 2009.
17. PI: Francisco C. Robles Hernandez, Title: Development of TiO<sub>2</sub> Materials to Improve the Photo catalytic Efficiency of Commercial Si Solar Cells, Sponsor: University of Houston, Budget: \$ 3,000, Period: 2010-2011.
18. PI: Francisco C. Robles Hernandez, Title: Heat exchange improvement ideas for Water Heater Trucks, Sponsor: McAda Fluids Heating Services, Budget: \$ 68,650, Period: 2011-2012.
19. PI: Francisco C. Robles Hernandez, Title: Laser Cladding of Welds to Improve Railroad Track Safety, Sponsor: National Academies, Safety Transit – IDEA Program, Budget: \$ 168,171, Period: 2013-2014.
20. PI: J. Neal, CoPI's: Francisco C. Robles Hernandez and R. Lee, Title: Prevalence of Carbon Nanotubes in Irradiated Foods and the Potential Impact on Health, Sponsor: GEAR – University of Houston, Budget: \$ 29,996, Period: 2013-2014.
21. PI: Francisco C. Robles Hernandez, Title: Start Up Budget, Sponsor: College of Technology, and the Department of Engineering Technology at the University of Houston, Budget: \$ 185,000, Period: 2008-2011.



22. PI: Francisco C. Robles Hernandez, Title: Provost Faculty Travel Funds, Sponsor: University of Houston, Budget: \$ 750, Period: 2009.
23. PI: Francisco C. Robles Hernandez, Title: Provost Faculty Travel Funds, Sponsor: University of Houston, Budget: \$ 750, Period: 2010.
24. PI: Francisco C. Robles Hernandez, Title: Provost Faculty Travel Funds, Sponsor: University of Houston, Budget: \$ 750, Period: 2013.
25. **Senior Personnel:** Francisco C. Robles Hernandez, Title: ADVANCE: Center to ADVANCEing UH Faculty, Sponsor: National Science Foundation, Budget: \$ 3.3 M,
26. **PI:** Dr. Xiaojing Yuan, **Co-PI:** Dr. Heidar Malki, **Senior Personnel:** Francisco C. Robles Hernandez, Title: Succeed in Engineering Technology Scholars (SETS): Identifying and Developing Future Technology Leaders, Sponsor: National Science Foundation, Budget: \$ 639,895, Period: 2015-2018.
27. H. Ardebili, S. Chen, J. Meen, V. Selvamanickam, J. E. Snow, MRI: Acquisition of a Multifunctional Integrated Scanning Electron Microscope to Support Materials and Device Research at the University of Houston, **Senior Personnel: Francisco C. Robles Hernandez**, Total Budget: \$ 1,432,000, Sponsor: National Science Foundation, Budget: \$ 1002,659, cost share by UH: 429,711Period: 08/2016-07/2017.
28. S. Brankovic (**PI**), F. C. Robles Hernandez (**Co-PI**), CRACK FORMATION IN ELECTRODEPOSITED THIN FILM COATINGS, Budget: \$367,516.00, Sponsor: National Science Foundation, Period: 06/2016-05/2019. *Pending*
29. S. Brankovic (**PI**), F. C. Robles Hernandez (**Co-PI**), STRESS CONTROL IN ELECTRODEPOSITED MAGNETIC THIN FILMS AND NANOSTRUCTURES, Budget: \$367,516.00, Sponsor: National Science Foundation, Period: 06/2016-05/2019. *Pending*
30. S. Brankovic (**PI**), F. C. Robles Hernandez (**Co-PI**), STRAINED ANNEALING - A NOVEL APPROACH TOWARDS IMPROVED ELECTRICAL PROPERTIES AND RELIABILITY OF ELECTRODEPOSITED METALLIC NANOWIRES, Budget: \$ 388,526, Sponsor: National Science Foundation, Period: 06/2016-05/2019. *Pending*

**Peer-Reviewer for the Following Journals**

- Advanced Engineering Materials
- Composites Part B: Engineering
- Current Science
- International Journal of Applied Ceramic Technology
- Journal of ASTM International
- Journal of Applied Ceramic Technology
- Journal of Materials Chemistry and Physics
- Journal of Materials Science
- Journal of Mechanical Engineering Science
- Journal Surface Coatings and Technology
- Materials Characterization
- Materials Research Bulletin
- Materials Science and Engineering
- Metallurgical and Materials Transactions
- Metallurgical Transactions
- Proceedings of the Institute of Mechanical Engineers
- Surface and Coatings Technology
- Thermomechanical Acta
- Wear
- 2011 ASEE GSW Annual Conference

### Awards and Distinctions

- **F. C. Robles Hernández**, N. G. Demas, K. Gonzales, A. A. Polycarpou, Correlation between Ball-on-disk Test and Full-scale Rail Performance Tests, *Wear* 270 (2011) 479–491. **Feature as the 6<sup>th</sup> most downloaded paper from Jan-March 2011 and 17<sup>th</sup> place from Jan-Dec 2011.**
- Mohamed MA, Barnett B, **Robles Hernandez F.C.**, Eberth JF. “Quantifying Elastic Fiber Network Fragmentation Using Raman Spectroscopy,” MAES 37th Annual Symposium, Oakland California (2011). **Best Paper Award**
- **F. C. Robles Hernández**, S. Cummings, S. Kalay, Dan Stone, “Development and Evaluation of Advanced Wheel Steels to Prevent Wheel Failures in North American Heavy Haul Operating Environment”, International Heavy Haul conference, Shanghai, China, June, 2009. **Best Paper Award**  
<http://www.aar.com/news/pdfs/IHHA%20TTTCI%20Best%20Paper%20awards%202009.pdf>
- F. C. Robles Hrnandez, H. A. Calderon, COM conference held in Montreal, Canada 2002. **Second Best Poster**
- **Scholarship:** Master Degree Studies at the National Polytechnic in Mexico City by the “Consejo Nacional de Ciencia y Tecnología” (CONACYT), 1996-1998, Mexico.
- **Scholarship:** PhD Degree Studies at the University of Windsor, Ontario Canada by the “Consejo Nacional de Ciencia y Tecnología” (CONACYT), 2000-2004, Canada.
- **Visa differential scholarship:** for international students at the University of Windsor, Engineering Department, 2001-2004.
- **Five Scholarships:** American Foundry Society and Foundry Educational Foundation (USA) 2002-2004.
- **Scholarship:** North American Die Casting Association (NADCA), 2003.

### **Research Collaborations**

- Argonne National Laboratory: Dr. N. Demas
- CAES, Idaho Falls: Dr. D. Butt
- Centro de Investigaciones y Estudios Avanzados (CINVESTAV): Dr. J. Toburcio Baez (Zacatenco), Jaime Muños Saldaña (Queretaro).
- Instituto Politécnico Nacional, Mexico: Profs. H. A. Calderón B., G. Plascencia Barrera, D. Jaramillo Viguera, H. Dorantes Rosales, L. Díaz Barriga Arceo
- Materials Science and Engineering Department at the Universidad Politécnica de Cataluña, Spain: Dr. J. M. Cabrera Marrero.
- Mexican Petroleum Institute: Dr. Vicente Garibay Febles, Dr. Fernando Alvarez Ramírez.
- Nanotechnology and Materials Sciences, Nagoya Institute of Technology: Dr. G. Rius Suñe.
- Politecnico di Torino, Applied Science and Technology Dept.: Dr. Alberto Tagliaferro
- The Pennsylvania State University: Prof. M. Terrones and Dr. N. Perea
- Research Center for Advanced Materials (CIMAV): Dr. R. Martínez Sánchez, Dr. M. Herrera Ramírez.
- University of Pittsburgh: Prof. C. Isaac García, Dr. R. Ordoñez Olivares.
- University of Houston: Dr. V. Hadjiev, Dr. J. Bao, Dr. S. S. Pei, Dr. J. Neal, Dr. N. Badi, Dr. D. Starikov, Dr. R. Iyer, Dr. F. Merchant, Dr. A. Bensaoula.
- Texas A&M University: Prof. Andreas Polycaopou, R. Arroyave.
- Universidad Michoacana, Dr. J. Zarate Medina.
- University of South Carolina School of Medicine, Dr. J. Eberth.
- University of Toronto: Dr. A. Mitrasinovic, Dr. G. Plascencia Barrera

### Invited Talks

- F. C. Robles Hernández, R. Iyer, J. Neal, K. Smith, S. A. Sirsat, J. Bao, C. A. Mirabal, Enhanced Co-Catalytic Behavior of TiO<sub>2</sub> by Additions of Decorating CoO Nanoparticles, Gas, Oil and Petroleum Engineering, November 10-16, 2016, Las Vegas, USA. *Invited Talk*
- P. Jagadale, F. C. Robles Hernandez, D. Demarchi, A. Tagliaferro, Improving Composite Properties and Biosensor Sensitivity Using Low Cost Nanostructured Carbons, 28th International Microprocesses and Nanotechnology Conference (MNC 2015), November 10-13, Toyama International Conference Center, Toyama, Japan. *Invited Talk*
- F. C. Robles Hernandez, Pure Elastic Phenomena Induced by a sp<sup>2</sup> Carbon Allotrope Reinforcement for Advanced Structural Composites, Engineering Department at the University of St. Thomas, March 20, 2015. *Invited Talk*
- F. C. Robles Hernandez, Pure Elastic Phenomena Induced by a sp<sup>2</sup> Carbon Allotrope Reinforcement for Advanced Structural Composites, Electrical Engineering Department at the University of Houston, March 13, 2015. *Invited Talk*
- F. C. Robles Hernandez, Manufacturing of Advanced Materials for Structural and Energy Related Applications, Mechanical Engineering Department at the University of Alberta, March 6, 2015. *Invited Talk*
- S.S. Pei, Y.T. Lin, K.P. Huang, S.C. Chang, S.R. Xing, F. Robles Hernandez, R. Beisenov, Z. Mansurov, CVD Graphene and 2D Transition Metal Dichalcogenides, Fourth International Symposium on Nanotech, Energy and Space, San Antonio May 12-14, 2015. *Invited Talk*
- J. Bao, S. Baldelli, F. C. Robles Hernandez, R. Zhifeng, Efficient solar water-splitting using a nanocrystalline CoO photocatalyst, First Conference in Artificial Photosynthesis, Cocoyoc Mexico, November 2-6, Morelos, Mexico. *Invited Talk*
- F. C. Robles Hernández, A. K. P. D. Savio, J. Fletcher, R. Iyer, J. Bao, Overview of the Synthesis and Catalytic Activity of TiO<sub>2</sub>, First Conference in Artificial Photosynthesis, Cocoyoc Mexico, November 2-6, Morelos, Mexico. *Invited Talk*
- **F. C. Robles Hernandez**, H. A. Calderon, D. Barber, A. Okonkwo, J. Quintero, R. Ordoñez Olivares, V. Hadjiev, F. Alvarez, Unprecedented elastic behavior induced by in situ reinforced all carbon composites, Monclova Coah., Mexico, “VII Congreso Internacional de Metalurgia y Materiales”, April 4, 2014. *Keynote Speaker.*
- H. A. Calderon, D. Barber, F. Alvarez Ramirez, A. Okonkwo, J. Quintero, R. Ordoñez Olivares, V. Hadjiev, **F. C. Robles Hernandez** Pure elastic phenomena in all carbon composites and applications, MRS Cancun XXII International Materials Research Congress, Cancun, Qro. Mexico, August 11-15, 2013. *Invited Speaker.*
- **F. C. Robles Hernández**, Metallurgy of High Carbon Steels for Railroad Applications, Ferrous and Base Metals Development Network Conference 2012, Magaliesburg, South Africa, 15–17 October 2012, *VIP-Keynote Speaker.*
- **F. C. Robles Hernández**, D. Barber, J. Quintero, A. E. Fals, 2012 Southwest Regional ACS Meeting, Conjugated-Carbon Nanostructures: Molecular Topology, Tunable Properties and Applications, November 4-7, 2012. *Invited Speaker.*
- R. Ordóñez Olivares, C.I. Garcia, A. DeArdo, S. Kalay, **F.C. Robles Hernández**, Metallurgy of High Carbon Steels for Railroad Applications, V Congreso

Internacional de Metalurgia y Materiales, Physical Metallurgy: Steels, September 28-30, 2011, Monclova Coah., Mexico. **Key Note Speaker**

- **F. C. Robles Hernandez**, Solid State Synthesis of Carbon Nanostructures, to Dr. A. Alpas group: Lightweight Materials for Automotive Products and Manufacturing, University of Windsor, Windsor, Canada, October 2009.
- **F. C. Robles Hernandez**, Development of an Effective Carbon Nanostructure Reinforcement for Structural Applications, to Dr. M. Terrones Group at The Pennsylvania State University, March 2012.
- **F. C. Robles Hernández**, H. A. Calderon, Composites Reinforced with Carbon Nanostructures an Overview, XX International Materials Research Congress, Cancun, August 2011. **Invited Presentation**
- A. E. Fals, J. Quintero, **F. C. Robles Hernández**, Manufacturing of Hybrid Composites and Novel Methods to Synthesize Carbon Nano-particles, 1276:3 Advanced Structural Materials 2011. **Invited Paper**
- **F. C. Robles Hernández**, H. A. Calderón, “Synthesis of fullerene on Fe-C composites by Spark Plasma Sintering & thermomechanical transformation of fullerene to diamond”, XVIII International Materials Research Congress, Cancun 2009. **Invited Presentation**.
- F. C. Robles Hernández, Comparison among Chemical and Electromagnetic Stirring and Vibration Melt Treatments for Al-Si hypereutectic Alloys, the XIX International Materials Research Congress, Cancún, Mexico, August, 2010. **Invited Presentation**

#### **Patents**

- US Patent Number: US7559999, Publication Number: 20090053095 (2009), F. C. Robles Hernandez, Daniel Hunter Stone, Railroad Steel Having Improved Resistant to Rolling Contact Fatigue.
- US Patent Number: US7591909, Publication Number: 20090051182 (2009), F. C. Robles Hernandez, Daniel Hunter Stone, Railroad Wheel Steel Having Improved Resistance to Rolling Contact Fatigue.

#### **Record of Invention and Provisional Patent**

- **F. C. Robles Hernandez** and A. Okonkwo, (University of Houston) and Dr. H. A. Calderon Benavides (Instituto Politécnico Nacional – ESFM, México), Synthesis of Effective Carbon Nanoreinforcements for Structural Applications, Provisional Patent (Attorney Dkt. No.: 20005.0002.PZUS00 / UHID 2014-015) and Final Patent filled in Process.

#### **Papers in Journals, Peer-Review Proceeding, Presentations, and Reports**

**Bullets:** “♦” Books “\*” Peer review articles, “•” proceedings “○” posters/presentations and “-” industrial reports.

**Author’s Contribution:** Students are identified with an “§”, Dr. F.C. Robles Hernandez listed as group leader “‡”, and Dr. F.C. Robles Hernandez listed as main contributor “†”.

#### **Publications by Year**

#### **Books**

- ◆ J. López Cuevas, A. García Murillo, **F. C. Robles Hernández**, Editors of the Proceedings of the 2014 IMRC Symposium 4A: Advanced Structural Materials, Conference held in Cancun, Quintana Roo, August 17-21, 2014, MRS, 1765, 2015.
- ◆ J. López Cuevas, M. Herrera Ramírez, **F. C. Robles Hernández**, Editors of the Proceedings of the 2015 IMRC Symposium 6B: Advanced Structural Materials, Conference held in Cancun, Quintana Roo, August 16-20, 2015, MRS, In Process.
- ◆ **F. C. Robles Hernandez**, Dr. J. M. Herrera Ramírez, The use of Hypo and Hyper-eutectic Al-Si Alloys for Automotive, Aeronautical and Aerospace Applications, Springer Science, New York, NY 10013-1578 USA, to be submitted in the Summer 2016.

## 2016

### Peer Review Papers

- \* I. Estrada-Guel, H. A. Calderon, F. Alvarez- Ramírez, V. G. Hadjiev, **F.C. Robles Hernandez**, Morphed graphene nanostructures: Experimental evidence for existence, Carbon, 102, 288-296, 2016.
- \* A. K. P. D. Savio§, J. Fletcher§, R. Iyer, J. Bao, **F. C. Robles Hernández**‡†, Environmentally effective photocatalyst CoO–TiO<sub>2</sub> synthesized by thermal precipitation of Co in amorphous TiO<sub>2</sub>, Applied Catalysis B: Environmental, 182, 2016, 449-455.
- \* A. J. Corsi§, **F. C. Hernandez Robles**, Jack A. Neal, The effectiveness of electron beam irradiation to reduce or eliminate mould in cork stoppers, International Journal of Food Science and Technology, 51, 2, 2016, 389-395.

### Conferences (Presenter in Italics)

- *F. C. Robles Hernández*, R. Iyer, J. Neal, K. Smith, S. A. Sirsat, J. Bao, C. A. Mirabal, Enhanced Co-Catalytic Behavior of TiO<sub>2</sub> by Additions of Decorating CoO Nanoparticles, Gas, Oil and Petroleum Engineering, November 10-16, 2016, Las Vegas, USA. **Invited Talk**

### Submitted

- \* P. Jagadale, F. C. Robles Hernandez, D. Demarchi1, A. Tagliaferro, Improving Composite Properties and Biosensor Sensitivity Using Low Cost Nanostructured Carbons, Review paper to the Japanese Journal of Applied Physics (JJAP), October 2015. **Invited Paper**
- \* **F. C. Robles Hernandez**, J. A. Neal, C. Mirabal, D. A. Pepe, S. A. Sirsat, Bacteriostatic Effect of CoO-TiO<sub>2</sub> on Listeria Monocytogenes by the Presence of the Co-Catalytic CoO Nanoparticles, Submitted July 2015.
- \* **F.C. Robles Hernández**‡†, R. Ordóñez Olivares, and C.I. Garcia, Metallurgy of High Carbon Rail Steels: A Review, March 2014.

## 2015

### Peer Review Papers

- \* I. Estrada-Guel, A. O. Okonkwo, **F.C. Robles Hernandez**, A Green Method for Graphite Exfoliation Using High-Energy Ball Milling, Microscopy and Microanalysis, 21, (S3), 2015, 615-616.

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- \* H. A. Calderon, Y. Liang§, H. D. Yoo§, Y. Li§, S. Jing§, **F. C. Robles-Hernandez**, Y. Yao, Low Dose Electron Microscopy of Interlayer Expanded Molybdenum Disulfide Nanocomposites, Microscopy and Microanalysis, 21, (S3), 2015, 10571058.
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- \* Yifei Li§, Yanliang Liang, **F. C. Robles Hernandez**, Hyun Deog Yoo§, Qinyou An§, Yan Yao, Enhancing sodium-ion battery performance with interlayer-expanded MoS<sub>2</sub>-PEO nanocomposites, Nano Energy, 15, 2015, 453-461.

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- *P. Jagadale*, F. C. Robles Hernandez, D. Demarchi<sup>1</sup>, A. Tagliaferro, Improving Composite Properties and Biosensor Sensitivity Using Low Cost Nanostructured Carbons, 28th International Microprocesses and Nanotechnology Conference (MNC 2015), November 10-13, Toyama International Conference Center, Toyama, Japan.

**Invited Talk**

- **F.C. Robles Hernandez**<sup>†‡</sup>, Anderson O. Okonkwo§, I. Estrada-Guel, S. Brankovic, H. A. Calderon, F. Alvarez- Ramírez, Room temperature synthesis of graphene/graphitic carbon nanostructures with a unique Sp<sup>2</sup> “cross-linked” bonding, Euromat 2014, symposium: A2.1: Carbon nanotubes; graphene and general nanocomposites, Warsaw Poland, September 20-24 2015.
- **F. C. Robles Hernandez**<sup>†‡</sup>, H. A. Calderon, D. Barber§, A. Okonkwo§, J. Quintero§, R. Ordoñez Olivares, V. Hadjiev, F. Alvarez- Ramírez, Unprecedented elastic behavior induced by in situ reinforced all carbon composites, Euromat 2014, symposium: A2.1: Carbon nanotubes; graphene and general nanocomposites, Warsaw Poland, September 20-24 2015



- *Jennifer Nguyen*§, Jack Neal, T. Randall Lee, **Francisco C. Robles Hernández**†† Unprecedented Growth of Rod-Like Nanostructures in Irradiated Wine Corks, International Materials Research Congress, Cancun, Symposium 1A: Nanoscience and Nanotechnology - Clusters and Cluster Assembled Materials, August 16-20, 2015.
- Anderson O. Okonkwo§, I. Estrada-Guel, V. G. Hadjiev, H. A. Calderon, F. Alvarez-Ramírez, **F.C. Robles-Hernandez**††, Synthesis of graphene/graphitic carbon nanostructures with a unique Sp<sup>2</sup> “cross-linked” bonding, International Materials Research Congress, Cancun, Materials Characterization, 5C. Electron Microscopy of Materials and Nanomaterials, August 16-20, 2015.
- A. K. P. D. Savio§, J. Fletcher§, K. Smith, R. Iyer, J. Bao, **F. C. Robles Hernández**††, Enhanced Photo-Degradation of Paraoxon, by the Co-Catalytic Effect of Co and Rh TiO<sub>2</sub>, International Materials Research Congress, Cancun, Symposium 6A: Materials For Specific Applications - Advanced Catalytic Materials, August 16-20, 2015.
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- *A. Tejada-Ochoa*, F.J. Baldenebro-Lopez, **F.C. Robles-Hernandez**, J.M. Herrera-Ramirez, Influence of Sodium Silicate Synthesis by Silica Sand in the Mechanical Properties of Geopolymer, International Materials Research Congress, Symposium 6A: Materials For Specific Applications - Advanced Structural Materials, August 16-20, 2015.
- *Jennifer Nguyen*§, Jack Neal, T. Randall Lee, **Francisco C. Robles Hernández**†† Unprecedented Growth of Rod-Like Nanostructures in Irradiated Wine Corks, International Materials Research Congress, Cancun, Symposium 6A: Materials For Specific Applications - Advanced Structural Materials, August 16-20, 2015. **Poster**
- *S.S. Pei*, Y.T. Lin§, K.P. Huang§, S.C. Chang§, S.R. Xing§, **F. Robles Hernandez**, R. Beisenov, Z. Mansurov, CVD Graphene and 2D Transition Metal Dichalcogenides, Fourth International Symposium on Nanotech, Energy and Space, San Antonio May 12-14, 2015. **Invited Talk**
- *Su-Chi Chang*§, Sirui Xing§, **F. C. Robles Hernandez**, *Shin-Shem Pei* Microwave Plasma Enhanced CVD graphene-based aerogels: synthesis and study, Carbon 2015, Dresden, July 12-17, 2015.
- *I. Estrada-Guel*, A. O. Okonkwo§, **F.C. Robles Hernandez**, Graphene related nanostructures synthesized by high-energy ball milling, Microscopy and Microanalysis Conference, Oregon Convention Center, Portland, Oregon, August 2-6, 2015.
- *H. A. Calderon*, Y. Liang, H. D. Yoo, Y. Li§, S. Jing§, **F. C. Robles Hernandez**, Y. Yao, Low Dose Electron Microscopy of Interlayer Expanded Molybdenum Disulfide

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- **F. C. Robles Hernandez**<sup>††</sup>, A. O. Okonkwo, 2015 Laser Cladding of Welds to Improve Railroad Track Safety, Industrial Report for the Federal Railroad Administration, Rail Safety IDEA Project 22, Transportation Research Board of the National Academies, June 2015.

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- \* I. Estrada-Guel, **F.C. Robles Hernandez**, R. Martínez-Sánchez, A Green Method for Graphite Exfoliation Using a Mechanochemical Route, *Microscopy and Microanalysis*, 20, S3, 1780-1781, 2014.
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- \* L. X. Liao, Q. Zhang, Z. Su, X. Lu, D. Wei, G. Feng, Q. Yu, X. Cai, **F.C. Robles Hernandez**, S. Baldelli, J. Bao, High-efficiency Solar Water Splitting by Nanocrystalline CoO Photocatalyst, *Nature Nanotechnology*, 9, 69-73-2014.

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- o J. Bao, S. Baldelli, F. C. Robles Hernandez, R. Zhifeng, Efficient solar water-splitting using a nanocrystalline CoO photocatalyst, First Conference in Artificial Photosynthesis, Cocoyoc Mexico, November 2-6, Morelos, Mexico. **Invited Talk**
- o *F. C. Robles Hernández*, A. K. P. D. Savio, J. Fletcher, R. Iyer, J. Bao, Overview of the Synthesis and Catalytic Activity of TiO<sub>2</sub>, First Conference in Artificial Photosynthesis, Cocoyoc Mexico, November 2-6, Morelos, Mexico. **Invited Talk**
- o **F. C. Robles Hernandez**, H. A. Calderon, D. Barber§, A. Okonkwo§, J. Quintero§, R. Ordoñez Olivares, V. Hadjiev, F. Alvarez, Unprecedented elastic behavior induced by

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- *J. Nguyen*§, *J. A. Neal*, **F. C. Robles Hernández**, *T. R. Lee*, Prevalence of Nanotubes in Irradiated Food Packaging and the Potential Impact on Health, 247th ACS National Meeting & Exposition, Dallas March 16-20, 2014.
- *A. O. Okonkwo*§, *P. Jagdale*, *A. Tagliaferro*, *V. G. Hadjiev*, **F. C. Robles Hernandez**, Development of Cost Effective Structural Material Reinforced with Complex Carbon Nanostructures For Multiple Applications, International Materials Research Congress, Cancun, 2014.
- *A. O. Okonkwo*§, *V. Kadekar*, *T. Metz*, *D. Gutscher*, **F. C. Robles Hernandez**, Laser Processing to Improve Track Safety, Ridership and Efficiency, International Materials Research Congress, Cancun, August 17-21, 2014.
- *E. Obiry*§, *A. O. Okonkwo*§, *A. Guloy*, *F. C. Robles Hernandez*, A Comparison of different Sintering methods in the development of Al<sub>2</sub>O<sub>3</sub> nanostructured composites reinforced with carbon nanostructures, International Materials Research Congress Cancun, August 17-21, 2014.
- *V. Gómez Flores*§, *P. E. García Casillas*, *K. Y. Castrejón Parga*§, *C. C. Gonzalez*§, *A. Jimenez Pérez*§, **F. C. Robles Hernandez**, Polymeric biomaterials reinforced with nanometer carbon and magnetite, ISMANAM 2014, Cancun, México June 29 to July 4, 2014.

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- \* **F. C. Robles Hernandez**<sup>††</sup>, J. A. Neal, U. S. Aldea§, Thermal Characterization Of Poultry For The Development of a Comprehensive Device to Monitor Safe and Proper Cooking, Journal of Food Process Engineering, Journal of Food Process Engineering, 36, 2, 2013, 160-172, DOI:10.1111/j.1745-4530.2011.00665.x
- \* A. K. P. D. Savio§, J. Fletcher§, **F. C. Robles Hernández**<sup>††</sup>, Sonosynthesis of nanostructured TiO<sub>2</sub> doped with transition metals having variable bandgap, Ceramics International, 39, 3, 2013, 2753–2765.
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- N. Badi, R. Mekala§, D. Ketharnath§, **F. Robles Hernandez**, J. Wosik, F. Chouit, S. Boukhezar, O. Guellati, M. Guerioune, Complex conductivity measurement of CNT/Polymer films using a non-contact microwave technique, Proceedings of the Nanotech Conference and Expo 2013, May 12-16, Washington D.C. 2013.
- N. Badi, R. Mekala§, **F. C. Robles Hernandez**, Synthesis of Al-Al<sub>2</sub>O<sub>3</sub>/PVDF Core-Shell Nanodielectrics for Energy Storage Applications, Proceedings of the Nanotech Conference and Expo 2013, May 12-16, Washington D.C. 2013.

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- H. A. Calderon, D. Barber§, F. Alvarez Ramirez, A. Okonkwo§, J. Quintero, R. Ordoñez Olivares, V. Hadjiev, **F. C. Robles Hernandez**<sup>††</sup> Pure elastic phenomena in all carbon composites and applications, MRS Cancun XXII International Materials Research Congress, Cancun, Qro. Mexico, August 11-15, 2013.
- J. F. Eberth, C.N. Brysch§, M. Paterson§, R. Ordoñez Olivares, **F.C. Robles Hernandez**<sup>††</sup>, Chitosan and Chitosan Composites Reinforced with Carbon Nanostructures, MRS Cancun XXII International Materials Research Congress, Cancun, Qro. Mexico, August 11-15, 2013.
- A. K. P. D. Savio§, J. Fletcher§, R. Iyer, **F. C. Robles Hernández**, Photodegradation of Paraoxon using doped sonosynthesized TiO<sub>2</sub>, MRS Cancun XXII International Materials Research Congress, Cancun, Qro. Mexico, August 11-15, 2013.
- H. A. Calderon, D. Barber§, A. Okonkwo§, J. Quintero§, R. Ordoñez Olivares, V. G. Hadjiev, **F. C. Robles Hernandez**<sup>††</sup>, Effective Reinforcement in carbon-carbon composites, ISMANAM 2013, Turin Italy, June 30 - July 5, 2013.
- A. Okonkwo§, D. Gutscher, **F. C. Robles Hernandez**<sup>††</sup>, Laser Cladding of Welds to Improve Railroad Track Safety, ISMANAM 2013, Turin Italy, June 30 - July 5, 2013.
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- Y. Wang§, Z. Su§, W. Wu§, S. Nie§, N. Xie§, H. Gong§, Y. Guo§, J. H. Lee, S. Xing, X. Lu, H. Wang, X. Lu, K. McCarty, S.S. Pei, **F. Robles Hernandez**, V. G. Hadjiev, J. Bao, Twisted Bilayer Graphene Superlattices, arXiv:1301.4488 [cond-mat.mtrl-sci], 2013.
- N. Badi, J. Kodali§, **F.C. Robles Hernandez**, A. Okonkwo§, M. Hobosyan, K. S. Martirosyan, Low cost carbon-silicon nanostructures for high performance electrochemical anode materials, Nanotech Conference and Expo 2013, May 12-16, Washington D.C. 2013.
- N. Badi, R. Mekala§, **F. Robles Hernandez**, Synthesis of Al-Al<sub>2</sub>O<sub>3</sub>/PVDF Core-Shell Nanodielectrics for Energy Storage Applications, Nanotech Conference and Expo 2013, May 12-16, Washington D.C. 2013.

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- \* A. E. Fals§, V. G. Hadjiev, **F. C. Robles Hernández**<sup>††</sup>, Multi-functional fullerene soot/alumina composites, Materials Science and Engineering A, 558, 2012, 13–20.
- \* J. F., Eberth, J.A. Neal, **F.C. Robles Hernandez**<sup>††</sup>, Evaluation of a Computationally Minimal Constituent-Based, Model of Heat Propagation through Poultry. International Journal of Food Science and Technology.2012: doi:10.1111/j.1365-2621.2012.02951.x.
- \* A. K.P.D. Savio§, D. Starikov, A. Bensaoula, R. Pillai§, L. L. de la Torre García, **F. C. Robles Hernández**<sup>††</sup>, Tunable TiO<sub>2</sub> (anatase and rutile) manufactured by mechanical means, *Ceramics International*, 38, 5, 3529-3535, 2012.
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- R. Ordoñez Olivares, I. C. Garcia, **F. C. Robles Hernández<sup>†‡</sup>**, Metallurgy of High Carbon Steels for Railroad Applications, Ferrous and Base Metals Development Network Conference 2012, Magaliesburg, South Africa, October 2012, 187-204
- A. E. Fals§, G. Majkic, **F. C. Robles Hernandez<sup>†‡</sup>**, Multi-functional Fullerene Soot/Alumina Composites, Proceedings of the ASME International Mechanical Engineering Congress & Exposition, IMECE2012, November 9-15, 2012, Houston, Texas, USA.
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- D. Barber§, H. A. Calderon, J. Quintero§, **F. C. Robles Hernandez<sup>†‡</sup>**, Synthesis of Carbon Nanostructures by Thermo-Mechanical Means, Proceedings of the ASME International Mechanical Engineering Congress & Exposition, IMECE2012, November 9-15, 2012, Houston, Texas, USA.
- I. D. Weerasinghe§, L. de la Torre García, **F. C. Robles Hernandez<sup>†‡</sup>**, Transient and Steady State Analysis of a Cross Flow Gas-Liquid Type Heat Exchanger in a Oil-Fired Mobile Frac Water Heating System, Proceedings of the ASME International Mechanical Engineering Congress & Exposition, IMECE2012, November 9-15, 2012, Houston, Texas, USA.

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- **F. C. Robles Hernández<sup>†‡</sup>**, D. Barber§, J. Quintero§, A. E. Fals§, Solid State Synthesis of Carbon Nanostructures and Applications, 2012 Southwest Regional ACS Meeting, Conjugated-Carbon Nanostructures: Molecular Topology, Tunable Properties and Applications, November 4-7, 2012. **Invited Speaker.**
- R. Ordoñez Olivares, C.I. Garcia, **F. C. Robles Hernández<sup>†‡</sup>**, “Metallurgy of High Carbon Steels for Railroad Applications”, Ferrous and Base Metals Development Network Conference, South Africa, Magaliesburg, 2012 **Keynote Speaker.**
- D. Barber§, H. A. Calderon, **F. C. Robles-Hernandez<sup>†‡</sup>**, Thermo-mechanical Synthesis of Carbon Nanostructures and Microstructured Diamond, International Conference on Diamond and Carbon Materials 2012, Granada, Spain, September 3-6, 2012.

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- \* **F. C. Robles Hernández**<sup>‡</sup>, L. González-Reyes, I. Hernández-Pérez, Effect of Coarsening of Sonochemical Synthesized Anatase on BET Surface Characteristics, *Materials Science Forum; Journal of Metastable and Nanocrystalline Materials* 691 (2011) 49-57.
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- \* A. E. Fals<sup>§</sup>, J. Quintero<sup>§</sup>, **F. C. Robles Hernández**<sup>‡†</sup>, Manufacturing of Hybrid Composites and Novel Methods to Synthesize Carbon Nano-particles, *MRS: Advanced Structural Materials* 1276:3, 2011. **Invited Paper**
- \* R. Ordóñez Olivares, C.I. Garcia, A. DeArdo, S. Kalay, **F.C. Robles Hernández**<sup>‡†</sup>, Advanced Metallurgical Alloy Design and Thermomechanical Processing for Rails Steels for North American Heavy Haul Use, *Wear*, 271, 1-2, 2011, 364-373. doi:10.1016/j.wear.2010.10.048
- \* **F. C. Robles Hernández**<sup>‡†</sup>, S. Cummings, S. Kalay, D. Stone, Properties and Microstructure of High Performance Wheels, *Wear*, 271, 1-2, 18, 2011, 374-381. doi:10.1016/j.wear.2010.10.017
- \* I.I. Santana-Garcia<sup>§</sup>, **F.C. Robles Hernandez**<sup>‡†</sup>, V. Garibay, H.A. Calderon, Fullerene-Metal Composites: Phase Transformations During Milling and Sintering, *Solid State Phenomena*, 172-174, 727-732, 2011.

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- R. Ordóñez Olivares, C.I. Garcia, A. DeArdo, S. Kalay, **F.C. Robles Hernández**<sup>‡†</sup>, Metallurgy of High Carbon Steels for Railroad Applications, V Congreso

- Internacional de Metalurgia y Materiales, Physical Metallurgy: Steels, Monclova Coah., Mexico, September 28-30, 2011. **Invited Presentation: Key Note Speaker**
- **F. C. Robles Hernández**<sup>‡†</sup>, H. A. Calderon, Composites Reinforced with Carbon Nanostructures an Overview, XX International Materials Research Congress, Cancun, August 2011. **Invited Presentation**
  - I. Santana-García§, **F. Robles Hernandez**, H.A. Calderon, Metal (Fe-Al)-Fullerene Nanocomposites Made by Powder Metallurgy Methods, TMS Annual Meeting, San Diego, March 3, 2011.
  - **M.A. Mohamed**, B. Barnett, **F.C. Robles Hernandez**, J.F. Eberth. “Quantifying Elastic Fiber Network Fragmentation Using Raman Spectroscopy,” MAES 37th Annual Symposium, Oakland California (2011). **Best Poster Award**
  - **M.A. Mohamed**§, Barnett B§, **F. C. Robles Hernandez**, J.F. Eberth. “Evaluation of Aortic Elastic Fiber Network Damage,” University of Houston, Undergraduate Research Day (2011).
  - A. J. Corsi, **F. C. Hernandez Robles**, Jack A. Neal, Electron Beam irradiation for the reduction of 2 4 6 trichloroanisole in wine cork, Institute of Food Technologists (IFT) conference, New Orleans LA, Poster Presentation, June 2011.

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- \* **F. C. Robles Hernández**<sup>‡†</sup>, H. A. Calderón, “Nanostructured Metal Composites Reinforced with Fullerenes”, JOM, 62, 2, 2010, 63-68. **Invited Research Summary**.
- \* **F. C. Robles Hernández**<sup>‡†</sup>, H. A. Calderón, “Synthesis of fullerene on Fe-C composites by Spark Plasma Sintering and its thermomechanical transformation to diamond”, MRS Proceedings, 1243, 2010. **Invited Paper**
- \* I. Santana-García§, **F.C. Hernandez-Robles**<sup>‡†</sup>, V. Garibay-Febles, H. A. Calderon, Metal (Fe, Al)-Fullerene Nanocomposites: Synthesis and Characterization, Microscopy and Microanalysis, 16, S2, 2010, 1688-1689.
- \* **F. C. Robles Hernández**<sup>‡†</sup>, S. Cummings, S. Kalay, Dan Stone, “Development and Evaluation of Advanced Wheel Steels to Prevent Wheel Failures in North American Heavy Haul Operating Environment”, Proc. IMechE, 224 Part F: Journal of Rail and Rapid Transit, JRRT372, 413-419.

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- A. K. P. D. Savio§, **F. C. Robles Hernández**<sup>‡†</sup>, New Methodology to Characterize TiO<sub>2</sub> (anatase:rutile) for Photo Catalytic Applications, MS&T'10, Houston, October 17-21, 2010.
- A. Fals§, **F. C. Robles Hernández**<sup>‡†</sup>, Development of hybrid nanostructured alumina-shape memory-carbon nanoparticles composites, MS&T'10, Houston, October 17-21, 2010.
- **F. C. Robles Hernández**<sup>‡†</sup>, Comparison among Chemical and Electromagnetic Stirring and Vibration Melt Treatments for Al-Si hypereutectic Alloys, the XIX International Materials Research Congress, Cancún, Mexico, August 15 – 19, 2010. **Invited Presentation**
- A. E. Fals§, J. Quintero§, **F. C. Robles Hernández**<sup>‡†</sup>, Manufacturing of Hybrid Composites and Novel Methods to Synthesize Carbon Nano-particles.



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- \* **F.C. Robles Hernández<sup>‡†</sup>**, J.H. Sokolowski, Effects and on-line prediction of electromagnetic stirring on microstructure refinement of the 319 Al-Si hypoeutectic alloy, *Journal of Alloys and Compounds*, 480, 2, 2009, 416-421.
- \* **F.C. Robles Hernández<sup>‡†</sup>**, G. Plascencia, Kevin Koch, “Rail base corrosion problem for North American transit Systems”, *Engineering Failure Analysis* 16, 281–294, 2009.

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- **F. C. Robles Hernández<sup>‡†</sup>**, S. Cummings, S. Kalay, Dan Stone, “Development and Evaluation of Advanced Wheel Steels to Prevent Wheel Failures in North American Heavy Haul Operating Environment”, International Heavy Haul conference, Shangai, China, June, 2009, **Best Paper Award**.
- **F. C. Robles Hernández<sup>‡†</sup>**, S. Kalay, Dan Stone, S. Cummings, “Properties and Microstructure of High Performance Wheels”, 8th International Conference on Contact Mechanics and Wear of Rail/Wheel Systems, (CM2009), Firenze, Italy, September 15-18, 73-79, Vol. 1, 2009.
- **F. C. Robles Hernandez<sup>‡†</sup>**, Semih Kalay, R. Ordoñez Olivares, C. I. Garcia, A. DeArdo, “Development of the New Rail Steels for the 21st Century”, 8th International Conference on Contact Mechanics and Wear of Rail/Wheel Systems, (CM2009), Firenze, Italy, September 15-18, Vol. 2, 567, 2009.
- **F. C. Robles Hernandez<sup>‡†</sup>**, K. Gonzales, S. Anankitpaiboon, N. G. Demas, A. Polycarpou “Wear Performance of Premium Rail Steels”, 8th International Conference on Contact Mechanics and Wear of Rail/Wheel Systems, (CM2009), Firenze, Italy, September 15-18, Vol. 2, 741-743, 2009.

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- *U. Aldea, J. Neal, F. C. Robles Hernandez<sup>‡†</sup>*, “Advance Food Safety Control by Means of Thermal Analysis”, Undergraduate Research Day, University of Houston, Poster presentation, October 2009.
- *F. C. Robles Hernández<sup>‡†</sup>*, H. A. Calderón, “Synthesis of fullerene on Fe-C composites by Spark Plasma Sintering & thermomechanical transformation of fullerene to diamond”, XVIII International Materials Research Congress, Cancun 2009. **Invited Presentation**.
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- **F. C. Robles Hernández<sup>†‡</sup>**, H. A. Calderón, “Production of Metal Matrix Composites with C<sub>Fullerene</sub> and C<sub>Graphite</sub> Reinforcements”, TMS Annual Meeting, February 15-19, 2009 San Francisco, California.
- *L. González-Reyes*, I. Hernández-Pérez, H. Dorantes Rosales, E. M. Arce-Estrada, **F. C. Robles Hernández<sup>†‡</sup>**, "Synthesis of Nanostructured Anatase and its Grain Size Effect on Catalytic Properties" Functional and Structural Nanomaterials: Fabrication, Properties, and Applications, TMS Annual Meeting, February 15-19, 2009 San Francisco, California.
- *L. González-Reyes*, I. Hernández-Pérez, H. Dorantes Rosales, E. M. Arce-Estrada, **F. C. Robles Hernández<sup>†‡</sup>**, “Effect of Surface Area of Sonochemical Synthesize Anatase on Catalytic Activity" Functional and Structural Nanomaterials: Fabrication, Properties, and Applications, TMS Annual Meeting, February 2009, San Francisco.

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- *L. González-Reyes*, I. Hernández-Pérez, H. Dorantes Rosales, E. M. Arce-Estrada, **F. C. Robles Hernández<sup>†‡</sup>**, “Sonochemical synthesis of nanostructured anatase and kinetics of phase transformation and coarsening at different heat treatment conditions”, TMS Annual Meeting Proceedings, Vol. 1, Materials Processing and Properties, New Orleans, Louisiana, February 15-19, 2008, 129-136.
- *L. Gonzalez-Reyes*, I. Hernández-Pérez, J. de J. Cruz Rivera, E. M. Arce-Estrada, **F. C. Robles Hernández<sup>†‡</sup>**, Characterization of Anatase Synthesized by Sonochemical Means and Effects of Heat Treatments”, TMS Annual Meeting Proceedings, Vol. 1, Materials Processing and Properties, New Orleans, Louisiana, February 15-19, 2008, 497-502.

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- D. Stone, **F. C. Robles Hernández**, G. Dahlman, “Effects of microvoids, oxide inclusions, and sulfide inclusions on the fatigue strength of wheel steels”, *Proceedings of JRCICE2007, 2007 ASME/IEEE Joint Rail Conference & Internal Combustion Engine Spring Technical Conference, USA, JRC/ICE2007-40011*, March 13-16, Pueblo, Colorado, 2007, 7-11.
- **F. C. Robles Hernandez**<sup>†‡</sup>, V. S. Sura, L. Liu, Y. Liu, S. Mahadevan, D. H. Stone Investigation of the Effect of Defects on Wheel Fatigue Performance Life, 15th International Wheel Set Congress, September 23-27, *Proceedings*, 2007.

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- **F. C. Robles Hernández**<sup>†‡</sup>, Joe LoPresti, Dave Davis, Luis Maal, “Mechanical Properties and Wear Performance of Premium Rail Steels”, Transportation Research Bureau, Washington D.C. January 2007.
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- **F. C. Robles Hernández<sup>†‡</sup>**, “Advanced Rail Steels, FAST Rail Performance”, Association of American Railroads-Heavy Axle Load Research Committee-Engineering Research Committee -TTCI Fall Meeting Jan. 2006, Pueblo, CO.
- **F. C. Robles Hernández<sup>†‡</sup>**, D. Gutscher, “Gas Pressure Rail Welding”, Association of American Railroads-Heavy Axle Load Research Committee-Engineering Research Committee-TTCI Fall Meeting, Jan. 2006, Pueblo, CO.
- **F. C. Robles Hernández<sup>†‡</sup>**, “Strategies to Prevent Wheel Failures”, Vehicle Track Systems-Mechanical Research Committee-TTCI May 2006, Chicago IL.

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- **F. C. Robles Hernández**, H. A. Calderón B., V. Garibay, E. Umemoto, “Production and Characterization of Metal-C Composites (Where Metal=Al or Fe and C=Graphite or Fullerene) Obtained from Mechanically Alloyed Powders”, International Symposium on Structures and Properties of Nanocrystalline Materials, 132nd TMS Annual Meeting & Exhibition in San Diego California, March 5, 2003.

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- D. Canadinc, K. Myung Lee, H. Sehitoglu, A. Polycarpou, **F. C. Robles Hernández**<sup>††</sup>, “Linking Microstructure-Mechanical Properties-Wear Performance”, Federal Railroad Administration, pp 250.
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