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#### Professional Preparation:

University of Puerto Rico, Rio Piedras	Chemistry	Ph.D.	December 2008
University of Puerto Rico, Rio Piedras	Chemistry	B.S.	2000

#### Appointments:

2009 – Present	TECRE Corp.	Director	Renewable Energy
2003 - 2008	University of Puerto Rico	Research Assistant	Fuel Cell Research
1999 – 2002	University of Puerto Rico	Research Assistant	Environmental Chemistry
2000	Norfolk State University	Summer intern	Atmospheric Chemistry

#### Publications

1. Stoupin, S.; Rivera, H.; Lib, Z.; Segre, C.U.; Korzeniewski, C.; Casadonte, D.J., Jr.; Inoue, H.; Smotkin, E. S., “Structural analysis of sonochemically prepared PtRu versus Johnson Matthey PtRu in operating direct methanol fuel cells” *Phys. Chem. Chem. Phys.*, 10, 6430-6437 (2008)
2. Rivera, H.; Lawton, J. S.; Budil, D. E.; Smotkin, E. S., “The effect of sorbed methanol, current and temperature on multi-component transport in Nafion based direct methanol fuel cells”, *Journal of Physical Chemistry B*, 112 (29), 8542–8548, (2008).
3. Wang, Z.-B.; Rivera, H.; Wang, X.-P.; Zhang, H.-X.; Feng, P.-X.; Lewis, E. A.; Smotkin, E. S., “Catalyst failure analysis of a direct methanol fuel cell membrane electrode assembly”, *Journal of Power Sources* 177, (2), 386-392 (2008)
4. Basnayake, R.; Li, Z.; Katar, S.; Zhou, W.; Rivera, H.; Smotkin, E. S.; Casadonte, D. J., Jr.; Korzeniewski, C., “PtRu nanoparticle electrocatalyst with bulk alloy properties prepared through a sonochemical method”, *Langmuir* 22, (25), 10446-50 (2006)

#### Presentations

1. Rivera, H.; Lawton, J. S.; Budil, D. E.; Smotkin, E. S., The Effect of Sorbed Methanol, Current and Temperature on Multi-Component Transport in Nafion based Direct Methanol Fuel Cells. ECS Meeting Abstracts 2008, 802, (11), 890.
2. Rivera, H.; Smotkin, E. S., The Effect of Local Component Concentrations, Current Density and Temperature on Transport Characteristics of Direct Methanol Fuel Cells. ECS Meeting Abstracts 2007, 702, (9), 607.
3. Lewis, E. A.; Rivera, A.; Jia, Q.; Stoupin, S.; Rivera, H.; Grice, C. R.; Segre, C.; Smotkin, E. S., Multipurpose Spectroscopic Fuel Cell for Evaluation of In Operando Membrane Electrode Assemblies. ECS Meeting Abstracts 2008, 802, (47), 2925.
4. Rivera, H.; Smotkin, E. S., Controlled Atmosphere Ripening of Johnson Matthey Pt Incorporated into Gas Diffusion Electrodes. ECS Meeting Abstracts 2008, 802, (11), 888.
5. Smotkin, E. S.; Stoupin, S.; Lewis, E. A.; Rivera, H.; Grice, C. R.; Jia, Q.; Fuccillo, M.; Segre, C., Subtractively Normalized XANES of Pt/C in Operating Fuel Cells: Theory-Experiment. ECS Meeting Abstracts 2008, 802, (11), 995.
6. Smotkin, E. S.; Stoupin, S.; Rivera, H.; Li, Z.; Segre, C.; Korzeniewski, C.; Casadonte, D. J., X-ray Analysis of Sonochemically Prepared PtRu Versus Johnson Matthey PtRu in Operating Direct Methanol Fuel Cells. ECS Meeting Abstracts 2008, 802, (11), 814.

7. Rivera, H., Smotkin, E.S., Methanol and CO<sub>2</sub> Crossover in Direct Methanol Fuel Cells: An On-line Mass Spectrometric Analysis, More Graduate Education at Mountain States Alliance (MGE@MSA) 7th Annual Student Research Conference at Arizona on April 23, 2007.
8. Wieckowski, A., Babu, P., Oldfield, E., Kim, H., Smotkin, E. S., Rivera, H., Diaz, M.; PT-RU ALLOY NANOPARTICLES STUDIED BY ELECTROCHEMICAL 195PT-NMR. Presented at Division of Colloid and Surface Chemistry 227th ACS National Meeting Anaheim, CA March 28-April 01, 2004.

#### Awards

1. 2006 – 2008 Puerto Rico Industrial Development Company (PRIDCO) Fellow.
2. 2007-2008 Puerto Rico Air National Guard Non-Commissioned Officer of the year.
3. Second Place on poster presentation at MGE@MSA 7th Annual Student Research Conference at Arizona on April 23, 2007.

#### Professional Organizations

1. American Chemical Society since 2001
2. Electrochemical Society since 2003
3. Air National Guard since 2001

#### Synergistic Activities

1. Co-founded the Technology and Education Center for Renewable Energy (TECRE) in Puerto Rico in 2008 to create jobs for Ph.D. graduates in science and technology in Puerto Rico. TECRE is a 501(c)(1) corporation located on the campus of Interamericana University in Bayamon Puerto Rico.

#### Collaborators

1. Carlo Segre, Illinois Institute of Technology
2. Carol Korzeniewski, Texas Tech University
3. Eugene S. Smotkin, Northeastern University