

Vijay Sethuraman's Academic Page**Address**

Vijay Anand Sethuraman, Ph.D. [Tamil/தமிழ்: விஜய் ஆனந்த் சேதுராமன்]
869 Pickens Industrial Dr NE #11, Marietta, GA 30062, United States of America
Google Voice: +1 (415) 935-0572; Email: vj@berkeley.edu

On [arXiv](#), [Google Scholar](#), [LinkedIn](#), [ORCID](#), [Publons/ResearcherID/Web of Science](#), [ResearchGate](#), and [Scopus](#)

Refereed Journal Articles

39. [Self-Discharge Induced Stresses and Associated Mechanical Damage in Na-ion Battery Electrodes](#) (with A. Alfadhli, A.K. Pakhare and S.P.V. Nadimpalli), *Experimental Mechanics*, Special Issue: Recent Progress in Chemomechanics, In Press **2026**. [[PDF](#)] [[Preprint](#)]
38. [Revealing the Stress Signature and Ion Origin of Metal Plating in Rechargeable Batteries](#) (with A. Chanda, A. Alfadhli, D.P. Abraham, and S.P.V. Nadimpalli), *Energy Storage Materials*, 86, 104921, **2026**. [[PDF](#)] [[SI](#)] [[Preprint](#)]
37. [Real-time Measurement of Sodiation Induced Stress in Hard Carbon Composite Electrodes](#) (with A. Chanda, A.S. Pakhare, A. Alfadhli, and S.P.V. Nadimpalli), *Journal of Power Sources*, 609, 234678, **2024**. [[PDF](#)] [[SI](#)] [[Preprint](#)]
36. [Measurement of Volume Changes and Associated Stresses in Ge Electrodes Due to Na/Na⁺ Redox Reactions](#) (with S. Rakshit, A.S. Pakhare, O. Ruiz, M. Reza Khoshi, E. Detsi, H. He, and S.P.V. Nadimpalli), *Journal of The Electrochemical Society*, 168 (1), 010504, **2021**. [[PDF](#)] [[SI](#)] [[arXiv](#)]
35. [Electric Field Induced Patterning in Cr Film under Ambient Conditions: A Chemical Reaction Based Perspective](#) (with S. Kumar, H. Suresh, P. Kumar, and R. Pratap), *Springer Nature Applied Sciences*, 2 (12), 2073, **2020**. [[PDF](#)] [[Preprint](#)] [[Videos](#)]
34. [A Novel Vortex-induced Vibration-based Piezoelectric Powered Generator for Maritime Propulsion Systems](#) (with Sirawit Shimpalee, M. Spigner, and Sirivatch Shimpalee), *Maritime Technology and Research*, 3 (1), 1-15, **2021**. [[PDF](#)]
33. [Critical Evaluation of Relative Importance of Stress and Stress Gradient in Whisker Growth in Sn Coatings](#) (with P. Jagtap, and P. Kumar), *Journal of Electronic Materials*, 47 (9), 5229-5242, **2018**. [[PDF](#)] [[arXiv](#)]
32. [In Situ Synthesis of Bismuth \(Bi\)/Reduced Graphene Oxide \(RGO\) Nanocomposites as High Capacity Anode Materials for Mg-ion Battery](#) (with T.R. Penki, G. Valurouthu, S. Shivakumara, and N. Munichandraiah), *New Journal of Chemistry*, 42 (8), 5996-6004, **2018**. [[PDF](#)] [[arXiv](#)]
31. [The Influence of Elastic Strain on Catalytic Activity in the Hydrogen Evolution Reaction](#) (with K. Yan, T.A. Maark, A. Khorshidi, A.A. Peterson, and P.R. Guduru), *Angewandte Chemie International Edition*, 55, 6175-6181, **2016**. [[PDF](#)] [[SI](#)] [[arXiv](#)]
German Edition: *Angewandte Chemie*, 128, 6283-6289, **2016**. [[PDF](#)] [[SI](#)] [[arXiv](#)]
30. [Real-time Stress Measurements in Germanium Thin Film Electrodes during Electrochemical Lithiation/delithiation Cycling](#) (with S.P.V. Nadimpalli, and R. Tripuraneni), *Journal of The Electrochemical Society*, 162 (14), A2840-A2846, **2015**. [[PDF](#)] [[arXiv](#)]
29. [Stress Evolution in Lithium-ion Composite Electrodes during Electrochemical Cycling and Resulting Internal Pressures on the Cell Casing](#) (with S.P.V. Nadimpalli, D.P. Abraham, A.F. Bower, and P.R. Guduru), *Journal of The Electrochemical Society*, 162 (14), A2656-A2663, **2015**. [[PDF](#)] [[arXiv](#)]
28. [Role of Elastic Strain on Electrocatalysis of Oxygen Reduction Reaction on Pt](#) (with D. Vairavapandian, M.C. Lafouresse, T.A. Maark, N. Karan, S. Sun, U. Bertocci, A.A. Peterson, G.R. Stafford, and P.R. Guduru), *Journal of Physical Chemistry C*, 119 (33), 19042-19052, **2015**. [[PDF](#)] [[arXiv](#)]
27. [Competition Between CO₂ Reduction and H₂ Evolution on Transition-metal Electrocatalysts](#) (with Y. Zhang, R. Michalsky, and A.A. Peterson), *ACS Catalysis*, 4 (10), 3742-3748, **2014**. [[PDF](#)] [[SI](#)] [[Preprint](#)]

26. [Investigation of Initial Lithiation of Silicon \(100\) Using Solid-State \$^7\text{Li}\$ NMR Spectroscopy](#)
(with M. Song, S.P.V. Nadimpalli, M.J. Chon, P.R. Guduru, and L.-Q. Wang), Journal of The Electrochemical Society, 161 (6), A915-A919, **2014**. [[PDF](#)] [[SI](#)] [[arXiv](#)]
25. [Measurement and Modeling of the Mechanical and Electrochemical Response of Amorphous Si Thin Film Electrodes during Cyclic Lithiation](#)
(with G. Bucci, S.P.V. Nadimpalli, A.F. Bower and P.R. Guduru), Journal of the Mechanics and Physics of Solids, 62, 276-294, **2014**. [[PDF](#)] [[arXiv](#)]
24. [On Plastic Deformation and Fracture in Si Films during Electrochemical Lithiation/delithiation Cycling](#)
(with S.P.V. Nadimpalli, G. Bucci, V. Srinivasan, A.F. Bower and P.R. Guduru), Journal of The Electrochemical Society, 160 (10), A1885-A1893, **2013**. [[PDF](#)] [[arXiv](#)]
23. [Stress Evolution in Composite Silicon Electrodes during Lithiation/Delithiation](#)
(with A. Nguyen, M.J. Chon, S.P.V. Nadimpalli, H. Wang, D.P. Abraham, A.F. Bower, V.B. Shenoy, and P.R. Guduru), Journal of The Electrochemical Society, 160 (4), A739-A746, **2013**. [[PDF](#)] [[arXiv](#)]
22. [Analysis of Electrochemical Lithiation and Delithiation Kinetics in Silicon](#)
(with V. Srinivasan, and J. Newman), Journal of The Electrochemical Society, 160 (2), A394-A403, **2013**. [[PDF](#)] [[arXiv](#)] [[Notes](#)]
21. [Quantifying Capacity Loss due to Solid-Electrolyte-Interphase Layer Formation on Silicon Negative Electrodes in Lithium-ion Batteries](#)
(with S.P.V. Nadimpalli, S. Dhalavi, B. Lucht, M.J. Chon, V.B. Shenoy, and P.R. Guduru), Journal of Power Sources, 215, 145-151, **2012**. [[PDF](#)] [[arXiv](#)]
20. [Real-Time Stress Measurements in Lithium-ion Battery Negative-electrodes](#)
(with N. Van Winkle, D.P. Abraham, A.F. Bower, and P.R. Guduru), Journal of Power Sources, 206, 334-342, **2012**. [[PDF](#)] [[arXiv](#)]
19. [Quantifying Oxidation Rates of Carbon Monoxide on a Pt/C Electrode](#)
(with S. Balasubramanian, B. Lakshmanan, C.E. Hetzke, and J.W. Weidner), Electrochimica Acta, 58, 723-728, **2011**. [[PDF](#)] [[arXiv](#)]
18. [Real-time Measurements of Stress and Damage Evolution during Initial Lithiation of Crystalline Silicon](#)
(with M.J. Chon, A. McCormick, V. Srinivasan, and P.R. Guduru), Physical Review Letters, 107, 045503, **2011**. [[PDF](#)] [[arXiv](#)]
17. [A Finite Strain Model of Stress, Diffusion, Plastic Flow and Electrochemical Reactions in a Lithium-ion Half-cell](#)
(with A.F. Bower, and P.R. Guduru), Journal of the Mechanics and Physics of Solids, 59 (4), 804-828, **2011**. [[PDF](#)] [[arXiv](#)]
16. [Increased Cycling Efficiency and Rate Capability of Copper-coated Silicon Anodes in Lithium-ion Batteries](#)
(with K. Kowolik, and V. Srinivasan), Journal of Power Sources, 196, 393-398, **2011**. [[PDF](#)] [[arXiv](#)]
15. [In Situ Measurements of Stress-Potential Coupling in Lithiated Silicon](#)
(with V. Srinivasan, A.F. Bower, and P.R. Guduru), Journal of The Electrochemical Society, 157 (11), A1253-A1261, **2010**. [[PDF](#)] [[arXiv](#)]
14. [In Situ Measurements of Biaxial Modulus of Si Anode for Li-ion Batteries](#)
(with M.J. Chon, M. Shimshak, N. Van Winkle, and P.R. Guduru), Electrochemistry Communications, 12 (11), 1614-1617, **2010**. [[PDF](#)] [[arXiv](#)]
13. [Analysis of Sulfur Poisoning on a PEM Fuel Cell Electrode](#)
(with J.W. Weidner), Electrochimica Acta, 55 (20), 5683-5694, **2010**. [[PDF](#)] [[arXiv](#)]
12. [Lithium Diffusion in Graphitic Carbon](#)
(with K. Persson, L.J. Hardwick, Y. Hinuma, Y.S. Meng, A. Van der Ven, V. Srinivasan, R. Kostecki, and G. Ceder), Journal of Physical Chemistry Letters, 1, 1176-1180, **2010**. [[PDF](#)] [[SI](#)] [[arXiv](#)]
11. [In Situ Measurements of Stress Evolution in Silicon Thin Films during Electrochemical Lithiation and Delithiation](#)
(with M.J. Chon, M. Shimshak, V. Srinivasan, and P.R. Guduru), Journal of Power Sources, 195 (15), 5062-5066, **2010**. [[PDF](#)] [[arXiv](#)]
10. [Surface Structural Disordering in Graphite upon Lithium Intercalation/Deintercalation](#)
(with L.J. Hardwick, V. Srinivasan, and R. Kostecki), Journal of Power Sources, 195 (11), 3655-3660, **2010**. [[PDF](#)] [[arXiv](#)]

9. [Measuring Oxygen, Carbon Monoxide and Hydrogen Sulfide Diffusion Coefficient and Solubility in Nafion Membranes](#) (with S. Khan, J.A. Jur, A.T. Haug, and J.W. Weidner), *Electrochimica Acta*, 54 (27), 6850-6860, **2009**. [[PDF](#)] [[arXiv](#)] [Code: [PDF](#), [ZIP](#)]
8. [Importance of Catalyst Stability vis-à-vis Hydrogen Peroxide Formation Rates in PEM Fuel Cell Electrodes](#) (with J.W. Weidner, A.T. Haug, M. Pemberton, and L.V. Protsailo), *Electrochimica Acta*, 54 (23), 5571-5582, **2009**. [[PDF](#)] [[arXiv](#)]
7. [Quantifying Desorption and Rearrangement Rates of Carbon Monoxide on a PEM Fuel Cell Electrode](#) (with B. Lakshmanan, and J.W. Weidner), *Electrochimica Acta*, 54 (23), 5492-5499, **2009**. [[PDF](#)] [[Preprint](#)]
6. [Durability of Perfluorosulfonic Acid and Hydrocarbon Membranes: Effect of Humidity and Temperature](#) (with J.W. Weidner, A.T. Haug, and L.V. Protsailo), *Journal of The Electrochemical Society*, 155 (2), B119-B124, **2008**. [[PDF](#)] [[Preprint](#)]
5. [Hydrogen Peroxide Formation Rates in a PEMFC Anode and Cathode: Effect of Humidity and Temperature](#) (with J.W. Weidner, A.T. Haug, S. Motupally, and L.V. Protsailo), *Journal of The Electrochemical Society*, 155 (1), B50-B57, **2008**. [[PDF](#)] [[arXiv](#)]
4. [Effect of Di-phenyl Siloxane on the Catalytic Activity of Pt on Carbon](#) (with J.W. Weidner, and L.V. Protsailo), *Electrochemical and Solid State Letters*, 10 (12), B207-B209, **2007**. [[PDF](#)] [[arXiv](#)]
3. [Polymer Electrolyte Membrane Resistance Model](#) (with S. Renganathan, Q. Guo, J.W. Weidner, and R.E. White), *Journal of Power Sources*, 160 (1), 386-397, **2006**. [[PDF](#)]
2. [Mathematical Model of a Direct Methanol Fuel Cell](#) (with B.L. Garcia, J.W. Weidner, R. Dougal, and R.E. White), *Journal of Fuel Cell Science and Technology*, 1 (1), 43-48, **2004**. [[PDF](#)] [[Errata](#)] [[arXiv](#)]
1. [Parameter Estimates for a PEMFC Cathode](#) (with Q. Guo, and R.E. White), *Journal of The Electrochemical Society*, 151 (7), A983-A993, **2004**. [[PDF](#)] [[arXiv](#)]

Other Publications

5. [Sodium Doped Strontium Silicates as Electrolyte for Intermediate Temperature Solid Oxide Fuel Cells](#) (with A.C. Kundur, and M.P. Singh), *Electrochemical Society Transactions*, 78 (1), 467-475, **2017**. [[PDF](#)]
4. [Polymer Electrolyte Membrane Fuel Cells: Cells](#) (with A.Z. Weber, and J.W. Weidner), *Encyclopedia of Electrochemical Power Sources*, 817-827, **2009**. [[PDF](#)]
3. [Academic Family Tree of Professor John Newman](#) (with P. Albertus), *Electrochemical Society Transactions*, 16 (13), 1-22, **2008**. [[PDF](#)] [[Poster](#)] [[Pictures](#)]
2. [Durability Aspects of Polymer Electrolyte Membrane Fuel Cells](#)
PhD Dissertation, University of South Carolina, **2006**. [[PDF](#)] [[ProQuest](#)]
1. [Engineering a Membrane Electrode Assembly](#) (with J.W. Weidner, and J.W. Van Zee), *Electrochemical Society Interface*, 12 (3), 40-43, **2003**. [[PDF](#)]

Last updated: May 5, 2026

Please [report](#) any broken link(s). Thank You!

Download this webpage in [PDF](#) with links intact

Made with [Notepad](#)