

Alexis GRIMAUD

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Research and Professional Experience

- 2014-Present **CNRS Assistant Researcher**, Collège de France, Paris
Solid-State Chemistry and Energy Laboratory
2019 Habilitation to conduct research (HDR), Sorbonne University
Grants the ability to act as independent PhD advisor

Education

- 2011 Ph.D., Institute of Condensed Matter Chemistry of Bordeaux (ICMCB), France
Title: Perovskite-derived mixed-conductors: Application to cathodes for H⁺-SOFC fuel cells
Advisors: Dr. Jean-Marc Bassat and Prof. Fabrice Mauvy
2008 M.S. in Chemistry and Physics
Graduate School of Chemistry, Biology and Physics of Bordeaux (ENSCBP)

Research Experience

- 2012-2014 Postdoctoral researcher, Prof. Yang Shao-Horn, MIT, USA
2008-2011 Institute of Condensed Matter Chemistry of Bordeaux (ICMCB), France

Visiting Positions

- 2016-2021 Visiting researcher, MIT, Prof. Harry Tuller, Department of Materials Science
2019 Visiting Professor, Osaka Prefecture University, Japan, May 2019

Research Expertise and Highlights:

Expertise lies at the frontier between materials science and physical/chemical properties of liquid electrolytes. My research program applies these principles to develop efficient electrochemical energy storage and conversion devices such as secondary batteries and water electrolyzers. In recent years, our science has identified new strategies to control the liquid water environment at the nanoscale. We reported the concept of ‘nanoreactors’, in which water is confined in an aprotic solvent containing alkali salts to impart new properties, and used them to tune the reactivity of water at electrified interfaces in support of better aqueous batteries (Nature Catalysis 2020, EES 2018). As a second example, we have reported a new class of reversible Li⁺ intercalation compounds based on transition metal halides. This was made possible by fostering our knowledge in superconcentrated electrolytes to stabilize these halides previously believed to be too soluble in classical battery electrolytes (Nature Materials 2021). Other topics include the development of water splitting catalysts that exploit reactivity of oxygen ligands (Nature Energy 2016, Nature Communications 2020).

Peer-Reviewed Journal Publications (* denotes corresponding author)

57 articles as independent researcher, 42 as corresponding author

81. Atkins, D., Ayerbe, E., Benayad, A., Capone, F., Capria, E., Castelli, I.E., Cekic-Laskovic, I., Ciria, R., Dudy, L., Edström, Johnson, M.R., Li, H., Lastra, J.M.G., Leal De Souza, M., Meunier, V., Morcrette, M., Reichert, H., Simon, P., Rueff, J.-P., Sotlann, J., Wenzel, W. and Grimaud, A.* *Understanding battery interfaces by combined characterization and simulation approaches: Challenges and perspectives*, Advanced Energy Materials, 2021, accepted.
80. Atkins, D., Capria, E., Edström, K., Famprakis, T., **Grimaud, A.**, Jacquet, Q., Johnson, M., Matic, A., Norby, P., Reichert, H., Rueff, J.-P., Villevielle, C., Wagemaker, M. and Lyonard, S. *Accelerating battery characterization using neutron and synchrotron techniques: Toward a multi-modal and multi-scale standardized experimental workflow*, Advanced Energy Materials, 2021, accepted.
79. Zhang, L., **Grimaud, A.**, Schwiedernoch, R., Yesid Hernandez W., Ordonsky, V. and Naghavi, N. *Quinone shuttling impels selective electrocatalytic alcohol oxidation: a hydrogen bonding-directed electrosynthesis*, Journal of Electroanalytical Chemistry, 2021, 115820.
78. Degoulange, D., Dubouis, N. and **Grimaud, A.***, *Towards the understanding of water-in-salt electrolytes: Individual ion activities and liquid junction potentials in highly concentrated aqueous solutions*, Journal of Chemical Physics, 2021, 155, 064701.
77. Castelli, I.E., Arismendi-Arrieta, J., Bhowmik, A., Cekic-Laskovic, I., Clark, S., Dominko, R., Flores, E., Flowers, J., Frederiksen, K.U., Friis, J., **Grimaud, A.**, Hansen, K.V., Hardwick, L.J., Hermansson, K., Königer, L., Lauritzen, H., Le Cras, F., Li, H., Lyonard, S., Lormann, H., Marzari, N., Niedzicki, L., Pizzi, G., Rahmanian, F., Stein, H., Uhrin, M., Wenzel, W., Winter, M., Wölke, K. and Vegge, T., *Data management plans: the importance of data management in the BIG-MAP project*, Batteries & Supercaps, 2021.
76. Lombardo, T., Duquesnoy, M., El-Bouysidy, H., Arén, F., Gallo-Bueno, A., Jorgensen, P.B., Bhowmik, A., Demortière, A., Ayerbe, E., Alcaide, F., Reynaud, M., Carrasco, J., **Grimaud, A.**, Zhang, C., Vegge, T., Johansson, P. and Franco A., *Artificial intelligence applied to battery research: Hype or reality?*, Chemical Review, 2021.
75. Marchandier, T., Dubouis, N., Fauth, F., Avdeev, M., **Grimaud, A.**, Tarascon, J.M. and Rouse, G., *Crystallographic and magnetic structures of the VI_3 and $LiVI_3$ van der Waals compounds*, Physical Review B, 2021, 104, 014105.
74. Dubouis, N., Marchandier, T., Rouse, G., Marchini, F., Fauth, F., Avdeev, M., Iadecola, A., Porcheron, B., Deschamps, M., Tarascon, J.M.* and **Grimaud, A.*** *Enlarging insertion electrochemistry to soluble layered halides with superconcentrated electrolytes*, Nature Materials, 2021.
73. Drogue, L., Hobold, G.M., Lagadec, M.-F., Guo, R., Lethien, C., Hallot, M., Fontaine, O., Tarascon, J.M., Gallant, B.M.* and **Grimaud, A.*** *Can an inorganic coating serve as stable SEI for aqueous superconcentrated electrolytes?*, ACS Energy Letters, 2021, 6, 2575-2583.
72. Wu, T., Ren, X., Sun, Y., Sun, S., Xian, G., Scherer, G., Fisher, A., Mandler, A., Ager, J., **Grimaud, A.**, Wang, J., Shen, C., Yang, H., Gracia, J., Gao, H.-J. and Xu, Z. *Spin pinning effect to reconstructed*

- oxyhydroxide layer on ferromagnetic oxides for enhanced water oxidation*, Nature Communications, 2021, 12, 3634.
71. Dubouis, N., France-Lanord, A., Brige, A., Salanne, M.* and **Grimaud, A.*** *Anion specific effects drive the formation of Li-salt based aqueous biphasic systems*, Journal of Physical Chemistry B, 2021,125, 5365-5372.
 70. El Bousiydy, H., Lombardo, T., Primo, E., Dusquenoy, M., Morcrette, M. Johansson, P. Simon, P., **Grimaud, A.** and Franco, A.A.*, *What can text mining tell us about Li-ion battery researchers' habits?*, Batteries & Supercaps, 2021, 4, 758-766.
 69. Serva, A., Dubouis, N., **Grimaud, A.*** and Salanne, M.*, *Confining water in ionic and organic solvents to tune its adsorption and reactivity at electrified interfaces*, Accounts of Chemical Research, 2021, 54, 4, 1034-1042, 2021.
 68. Abdelghani Idriss, S., Dubouis, N., **Grimaud, A.**, Stevens, P., Toussaint, G. and Colin, A., *Effect of electrolyte on a gas evolution electrode*, Scientific Reports, 2021, 11, 4677.
 67. Duan, Y., Lee, J.Y., Xi, S., Sun, Y., Ong, S.J.H., Chen, Y., Dou, S., Meng, F., Diao, C., Wang, X., **Grimaud, A.*** and Xu, Z.*, *Controllable cation leaching promoted surface reconstruction for water oxidation*, Angewandte Chemie International Edition, 2021, 60, 7418-7425.
 66. **Grimaud, A.*** *Acidic or basic oxides? Better together*, Joule, 2020, 4, 2251-2253, Preview.
 65. Droguet, L., **Grimaud, A.***, Fontaine, O. and J.-M. Tarascon* *Water in salt electrolytes (WiSE) for aqueous batteries: a long way to practicality*, Advanced Energy Materials, 2020, 10, 2002440.
 64. Lagadec, M.-F and **Grimaud, A.*** *Water electrolyzers with closed and open systems*, Nature Materials, 2020, 19, 1140-1150.
 63. Dubouis, N., Serva, A., Berthin, R., Jeanmairet, G., Porcheron, B. Salager, E., Salanne, M.* and **Grimaud, A.*** *Tuning the water reduction through controlled nanoconfinement within an organic liquid matrix*, Nature Catalysis, 2020, 3, 656-663.
 62. Ben Osman, M., Yin, W., Petenzi, T., Jousselme, B., Cornut, R. Raymondo-Pinero, E., **Grimaud, A.** and Laberty-Robert, C. *Electrospun carbon fibers as air cathodes for aprotic Li-O₂: toward cathode design for enhanced capacity*, Electrochemical Acta, 2020, 354, 136643.
 61. Azcarate, I., Yin, W., Methivier, C., Ribot, F., Laberty-Robert, C.* and **Grimaud, A.*** *Assessing the oxidation behavior of EC:DMC based electrolyte on non-catalytically active surface*, Journal of the Electrochemical Society, 2020, 167, 080530.
 60. Zhang, R., Pearce, P.E., Pimenta, V., Cabana, J., Li, H., Alves Dalla Corte, D., Abakumov, A., Rousse, G., Giaume, D., Deschamps, M. and **Grimaud, A.*** *First example of protonation of Ruddlesden-Popper Sr₂IrO₄: a route to improved water oxidation catalysts*, Chemistry of Materials, 32, 3499-3509, 2020.
 59. Duan, Y., Dubouis, N., Huang, J., Alves Dalla Corte, D., Pimenta, V., Xu, Z. and **Grimaud, A.*** *Revealing the impact of electrolyte composition for Co-based water oxidation catalysts by the study of reaction kinetics parameters*, ACS Catalysis, 10, 4160-4170, 2020.

58. Yang, C., Rouse, G., Svane, K.L., Pearce, P.E., Abakumov, A.M., Deschamps, M., Cibir, G., Chadwick, A.V., Alves Dalla Corte, D., Hansen, H.A., Vegge, T., Tarascon, J.-M. and **Grimaud, A.*** *Cation insertion to break the activity/stability relationship for highly active oxygen evolution reaction catalyst*, Nature Communications, 11, 1378, 2020.
57. Yin, W., **Grimaud, A.**, Rouse, G., Abakumov, A.M., Senyshyn, A., Zhang, L., Trabensinger, S., Iadecolla, A., Foix, D., Giaume, D., Tarascon, J.-M. *Structural evolution at the oxidative and reductive limits in the first electrochemical cycle of $Li_{1.2}Ni_{0.13}Mn_{0.54}Co_{0.13}O_2$* , Nature Communications, 11, 1252, 2020.
56. Dubouis, N., and **Grimaud, A.***, *The hydrogen evolution reaction: from materials to interfacial descriptors*, Chemical Science, 10, 9165-9181, 2019, invited perspective.
55. Zhang, R., Pearce, P.E., Duan, Y., Dubouis, N., Marchandier, T. and **Grimaud, A.***, *The importance of water structure and catalysts-electrolyte interface on the design of water splitting catalysts*, Chemistry of Materials, 31, 8248-8259, 2019, *Up and Coming Series*, invited perspective (front cover).
54. Pearce, P.E., Yang, C., Iadecolla, A., Rodriguez-Carvajal, J., Rouse, G., Dedryvère, R., Abakumov, A.M., Giaume, D., Deschamps, M., Tarascon, J.-M. and **Grimaud, A.*** *Revealing the reactivity of the iridium trioxide intermediate for the oxygen evolution reaction in acidic media*, Chemistry of Materials, 31, 5845-5855, 2019.
53. Wu, T., Sun, S., Song, J., Xi, S., Du, Y., Bo, C., Sasangka, W.A., Liao, H., Gan, C.L., Zeng, L., Wang, H., Li, H. **Grimaud, A.*** and Xu, J.J.* *Fe-facilitated dynamic active site generation on spinel $CoAl_2O_4$ with self-termination of surface reconstruction for water oxidation*, Nature Catalysis, 2019, 2, 763-772.
52. Dubouis, N. Park, C. Deschamps, M. Abdelghani-Idrissi, S. Colin, A. Salanne, M. Dzubielia,* J. **Grimaud, A.*** and Rotenberg, B.* *Chasing aqueous biphasic systems from simple salts by exploring the $LiTFSI/LiCl/H_2O$ phase diagram*, ACS Central Science, 54, 640-643, 2019.
51. **Grimaud, A.*** *Water electrolysis in search of performances... and therefore of electrocatalysts*, L'Actualité chimique, mars 2019.
50. Zhang, R., Dubouis, N., Ben Osman, M., Yin, W., Sougrati, M.T, Alves Dalla Corte, D., Giaume, D. and **Grimaud, A.*** *Dissolution/precipitation equilibrium on the surface of iridium-based perovskites as oxygen evolution reaction catalysts in acidic media*, Angewandte Chemie International Edition, 58, 4571-4575, 2019.
49. Duan, Y., Sun, S., Sun, Y., Xi, S. Chi, X. Zhang, Q., Ren, X., Wang, J., Jun Hoong Ong, S., Du, Y., Gu, L., **Grimaud, A.** and Xu, Z.J. *Mastering surface reconstruction of metastable spinel oxides for better water oxidation*, Advanced Materials, 31, 1807898, 2019.
48. Dubouis, N., Serva, A., Salager, E., Deschamps, M., Salanne, M. and **Grimaud, A.*** *The fate of water at the electrochemical interfaces: electrochemical behavior of free water vs. coordinating water*, Journal of Physical Chemistry Letters, 9, 6683-6688, 2018.
47. Yang, C., Batuk, M., Jacquet, Q., Rouse, G., Yin, W., Zhang, L., Hadermann, J., Abakumov, A.M., Cibir, G., Chadwick, A., Tarascon, J.-M and **Grimaud, A.*** *Revealing the pH dependent activities and surface instabilities for Ni-based electrocatalysts during the oxygen evolution reaction*, ACS Energy Letters, 3, 2884-2890, 2018.

46. Dubouis, N., Lemaire, P., Mirvaux, B., Salager, E., Deschamps, M. and **Grimaud, A.*** *The role of hydrogen evolution reaction on the solid-electrolyte-interphase formation mechanism for “Water-in-Salt” electrolytes*, Energy and Environmental Science, 11, 3491-3499, 2018.
45. Yin, W., Mariyappan, S., **Grimaud, A.*** and Tarascon, J.-M., *Rotating ring disk electrode for monitoring the oxygen release at high potentials in Li-rich layered oxides*, Journal of the Electrochemical Society, 165, A3326-A3333, 2018.
44. Azcarate, I., Costentin, C., Methivier, C., Robert-Laberty, C. and **Grimaud, A.*** *Electron transfer at the metal oxide/electrolyte interface: A simple methodology for quantitative kinetics evaluation*, Journal of Physical Chemistry C, 122, 12761-12770, 2018.
43. **Grimaud, A.*** Iadecola, A., Batuk, D., Saubanère, M., Abakumov, A.M., Freeland, J.W., Cabana, J., Li, H., Doublet, M.-L., Rouse, G. and Tarascon, J.-M., *Chemical activity of the peroxide/oxide redox couple: case study of Ba₅Ru₂O₁₁ in aqueous and organic solvents*, Chemistry of Materials, 30, 3882-3893, 2018.
42. **Grimaud, A.*** *Electrocatalysts: an eye on surface changes*, Nature Catalysis, 1, 242-243, 2018.
41. **Grimaud, A.*** Yin, W., Lepoivre, F. and Tarascon, J.-M., *Controlling the specific CO₂ adsorption on electrochemically formed metallic copper surfaces*, Journal of the Electrochemical Society, 156, H163-H169, 2018.
40. Yin, W., **Grimaud, A.***, Azcarate, I., Yang, C. and Tarascon, J.-M., *The electrochemical reduction of CO₂ mediated by quinone derivatives: Implication for Li-CO₂ battery*, Journal of Physical Chemistry C, 122, 6546-6554, 2018.
39. Lutz, L., Dachraoui, W., Demortière, A., Johnson, L.R., Bruce, P., **Grimaud, A.*** and Tarascon, J.-M., *Operando monitoring of the solution-mediated discharge and charge processes in a Na-O₂ battery using liquid-electrochemical TEM*, Nano Letters, 18, 1280-1289, 2018.
38. Dubouis, N., Yang, C., Beer, R., Ries, L. Voiry, D. and **Grimaud, A.*** *Interfacial interactions as an electrochemical tool to understand Mo-based catalysts for the hydrogen evolution reaction*, ACS Catalysis, 8, 828-836, 2018.
37. Lutz, L., Alves Dalla Corte, D., Chen, Y., Batuk, D., Johnson, L.R., Abakumov, A., Yate, L., Azaceta, E., Bruce, P.G., Tarascon, J.-M. and **Grimaud, A.*** *The role of the electrode surface in Na-air batteries; insights in electro-chemical product formation and chemical growth of NaO₂*, Advanced Energy Materials, 8, 1701581, 2018.
36. Yang, C., Laberty-Robert, C., Batuk, D., Cibir, A., Chadwick, A., Pimenta, V., Yin, W., Zhang, L., Tarascon, J.-M. and **Grimaud, A.*** *Phosphate ion functionalization of perovskite surfaces for enhanced oxygen evolution reaction*, Journal of Physical Chemistry Letters, 8, 3466-3472, 2017.
35. Lutz, L., Alves Dalla Corte, D., Tang, M., Salager, E., Deschamps, M., **Grimaud, A.***, Johnson, L., Bruce, P. and Tarascon, J.-M. *Role of electrolyte anions in the Na-O₂ battery: implications for NaO₂ solvation and the stability of the sodium solid electrolyte interphase in glyme-ethers*, Chemistry of Materials, 29, 6066-6075, 2017.

34. Yang, C., Fontaine, O., Tarascon, J.-M. and **Grimaud, A.*** *Chemical recognition of active oxygen species on the surface of oxygen evolution reaction electrocatalysts*, Angewandte Chemie International Edition, 56, 8652-8656, 2017.
33. Blazquez-Alcover, I., Rousse, G., Alves Dalla Corte, D., Badot, J.C., **Grimaud, A.**, Rozier, P. and Tarascon, J.-M. *Improving ionic conductivity by Mg-doping of A_2SnO_3 ($A = Li^+, Na^+$)*, Solid State Ionics, 308, 16-21, 2017.
32. Yang, C. and **Grimaud A.*** *Factors controlling the redox activity of oxygen in perovskites: from theory to application for catalytic reactions*, Catalysts, 7, 149, 2017 (invited review).
31. **Grimaud, A.*** *Batteries: beyond intercalation and conversion*, Nature Energy, 2, 17003, 2017.
30. Azaceta, E., Lutz, L., **Grimaud, A.**, Vicent-Luna, J. M., Hamad, S., Yate, L., Cabanero, G., Grande, H.-J., Anta, J. A., Tarascon, J.-M. and Tena-Zaera, R. *Electrochemical reduction of oxygen in aprotic ionic liquids containing metal cations: Na-O₂ system case study*, ChemSusChem, 107, 1616-1623, 2017.
29. Yin, W., **Grimaud, A.*** Lepoivre, F., Yang, C. and Tarascon, J.-M., *Chemical vs electrochemical formation of Li_2CO_3 as a discharge product in Li-O₂/CO₂ batteries by controlling the superoxide intermediate*, Journal of Physical Chemistry Letters, 8(1), 214-222, 2017.
28. **Grimaud, A.***, Demortière, A., Saubanère, M., Dachraoui, W., Duchamp, M., Doublet, M.-L. and Tarascon J.-M. *Activation of surface oxygen sites on an iridium-based model catalyst for the oxygen evolution reaction*, Nature Energy, 2, art. no. 16189, 2017.
27. Lutz, L, Yin, W., **Grimaud, A.***, Alves Dalla Corte, D., Tang, M., Johnson, L., Azaceta, E., Saroukhanian, V., Naylor, A.J., Hamad, S., Anta, J.A., Salager, E., Tena-Zaera, R., Bruce, P. and Tarascon J.-M., *High capacity Na-O₂ batteries – Understanding the key parameters for solution-mediated discharge*, Journal of Physical Chemistry C, 120(36), 20068-20076, 2016.
26. **Grimaud, A.** and Tarascon, J.-M., *Batteries: Evolution and vision*, L'actualité chimique, 408-409, July 2016.
25. Lepoivre, F., **Grimaud, A.**, Larcher, D. and Tarascon J.-M. *Long-time and reliable gas monitoring in Li-O₂ batteries via a Swagelok derived electrochemical cell*, Journal of the Electrochemical Society, 163(6), A923-A929, 2016.
24. **Grimaud, A.**, Hong, W.T., Shao-Horn, Y. and Tarascon, J.-M. *Anionic redox processes for electrochemical devices*, Nature Materials, 15, 121-126, 2016.

Prior to CNRS (# denotes co-first author)

23. Han, B., # **Grimaud, A.**, # Giordano, L., Hong, W.T., Diaz-Morales, O., Lee, Y.-L., Hwang, J., Nenian, C., Stoerzinger, K., Yang, W., Koper, M.T.M. and Shao-Horn, Y. *Iron-based perovskites for catalyzing oxygen evolution reaction*, Journal of Physical Chemistry C, 122, 8445-8454, 2018 (# these authors contributed equally)

22. Hong, W.T., Stoerzinger, K.A., Lee, Y.-L., Giordano, L., **Grimaud, A.**, Johnson, A.M., Hwang, J., Crumlin, E.J., Yang, W. and Shao-Horn, Y., *Charge-transfer-energy-dependent oxygen evolution reaction mechanisms for perovskite oxides*, Energy and Environmental Science, 10, 2190-2200, 2017
21. **Grimaud, A.**, # Diaz-Morales, # O., Han, B., # Hong, W.T., Lee, Y.-L., Giordano, L., Stoerzinger, K., Koper, M.T.M. and Shao-Horn, Y. *Activating lattice oxygen redox reactions in metal oxides to catalyze oxygen evolution*, Nature Chemistry, 9, 457-465, 2017 (# these authors contributed equally)
20. Bachman, C.J., # Muy, S., # **Grimaud, A.**, # Chang, H.-H., Pour, N., Lux, S., Paschos, O., Maglia, F., Lupart, S., Lamp, P., Giordano, L. and Shao-Horn, Y *A review of inorganic solid-state electrolytes for lithium batteries : mechanisms and properties governing ion conduction*, Chemical Reviews, 116, 140-162, 2016 (# these authors contributed equally)
19. Gauthier, M., # Carney, T. J., # **Grimaud, A.**, # Giordano, L., Pour, N., Chang, H-H., Fenning, D. P., Pachos, O., Maglia, F., Lupart, S., Lamp, P. and Shao-Horn, Y. *The electrode-electrolyte interface in Li-ion batteries: Current understanding and new insights*, Journal of Physical Chemistry Letters, 6, 46-53-4672, 2015 (# these authors contributed equally)
18. Yao K. P. C., Risch M., Sayed S. Y. Lee Y.-L., Harding J. H., **Grimaud A.**, Pour N., Xu Z., Zhou J., Mansour A., Bardé F. and Shao-Horn Y. *Solid-state activation of Li_2O_2 oxidation kinetics and implications for Li- O_2 batteries*, Energy and Environmental Science, 8, 2417-2426, 2015.
17. Hong, W. T.; Risch, M.; Stoerzinger, K. A.; **Grimaud, A.**; Suntivich, J. and Shao-Horn, Y. *Toward the rational design of transition metal oxides for oxygen electrocatalysts*, Energy and Environmental Science, 8, 1404-1427, 2015.
16. Lee, D., Lee, Y-L., **Grimaud A.**, Hong, W. T., Biegalski M. D., Morgan D. and Shao-Horn Y. *Enhanced oxygen surface exchange kinetics and stability on epitaxial $\text{La}_{0.8}\text{Sr}_{0.2}\text{CoO}_{3-\delta}$ thin films by $\text{La}_{0.8}\text{Sr}_{0.2}\text{MnO}_{3-\delta}$ decoration*, Journal of Physical Chemistry C, 118, 14326, 2014.
15. Lee, D.; Lee, Y-L.; **Grimaud A.**; Hong W. T.; Biegalski M. D.; Morgan D. and Shao-Horn Y, *Strontium influence on the oxygen electrocatalysis of $\text{La}_{2-x}\text{Sr}_x\text{NiO}_{4+\delta}$ ($0.0 < x_{\text{Sr}} < 1.0$) thin films*, Journal of Materials Chemistry A, 2, 6480, 2014.
14. Yao K.P.C., Lu Y.-C., Amanchukwu, C. V.; Kwabi D. G.; Risch M.; Zhou J.; **Grimaud A.**, Hammond P. T.; Barde F. and Shao-Horn Y., *The influence of transition metal oxides on the kinetics of Li_2O_2 oxidation for Li- O_2 batteries: High activity of chromium oxides*, Physical Chemistry Chemical Physics, 13, 2297-2304, 2014.
13. **Grimaud A.**, Carlton C.E., Risch M., Hong W.T., May K.J. and Shao-Horn, Y., *Oxygen evolution activity and stability of $\text{Ba}_6\text{Mn}_5\text{O}_{16}$, $\text{Sr}_4\text{Mn}_2\text{CoO}_9$ and $\text{Sr}_6\text{Co}_5\text{O}_{15}$: The influence of transition metal coordination*, Journal of the Physical Chemistry C, 117, 25926, 2013.
12. **Grimaud A.**, May K.J., Carlton C.E., Lee Y.-L., Risch M., Zhou J. and Shao-Horn Y., *Double perovskite as a new family of highly active catalysts for oxygen evolution in alkaline solution*, Nature Communications, 4, art. no. 2439, 2013.
11. Lee D., **Grimaud A.**, Crumlin E.J., Mezghani K., Habib M.A., Feng Z., Hong W.T., Biegalski M.D., Christen H.M. and Shao-Horn, Y., *Strain influence on oxygen electrocatalysis of the (100)-oriented epitaxial $\text{La}_2\text{NiO}_{4+\delta}$ thin films at elevated temperatures*, Journal of Physical Chemistry C, 117, 18789, 2013.

10. Wang, L., Imashuku, S., **Grimaud, A.**, Lee, D., Mezghani, K., Habib, M. A. and Shao-Horn, Y., *Enhancing oxygen permeation of electronically short-circuited oxygen-ion conductors by decorating with mixed ionic-electronic conducting oxides*, ECS Electrochemistry Letters 2, F77, 2013.
9. Risch M., **Grimaud A.**, May K.J., Stoerzinger K.A., Chen T.J., Mansour A.N. and Shao-Horn Y., *Structural changes of cobalt-based perovskites upon water oxidation investigated by EXAFS*, Journal of Physical Chemistry C, 117, 8628, 2013.
8. Yao K.P.C., Kwabi D.G., Quinlan R.A., Mansour A.N., **Grimaud A.**, Lee Y.-L., Lu Y.-C. and Shao-Horn, Y., *Thermal stability of Li_2O_2 and Li_2O for Li-air batteries: In situ XRD and XPS studies*, Journal of the Electrochemical Society, 160, A824-A831, 2013.
7. May K.J., Carlton C.E., Stoerzinger K.A., Risch M., Suntivich J., Lee Y.-L., **Grimaud A.** and Shao-Horn Y., *Influence of oxygen evolution during water oxidation on the surface of perovskite oxide catalysts*, Journal of Physical Chemistry Letters, 3, 22, 2012.
6. **Grimaud A.**, Bassat, J.-M, Mauvy, F., Pollet, M. Wattiaux, A., Weill, F., Marrony, M. and Grenier, J.-C., *Oxygen reduction reaction of $\text{PrBaCo}_{2-x}\text{Fe}_x\text{O}_{5+\delta}$ compounds as H^+ -SOFC cathode: Correlation with physical properties*, Journal of Material Chemistry A, 2, 3594, 2014.
5. Dailly J., Marrony M., Taillades G., Taillades-Jacquin M., **Grimaud A.**, Mauvy F., Louradour E. and Salmi J., *Evaluation of proton conducting BCY-based anode supporting cells by co-pressing method: Up-scaling, performances and durability*, Journal of Power Sources, 255, 302, 2014.
4. Xia, T., Brüll, A., **Grimaud, A.**, Fourcade, S., Mauvy, F., Zhao, H., Grenier J-C and Bassat, J-M. *Optimization of the electrochemical performance of a $\text{Ni/Ce}_{0.9}\text{Gd}_{0.1}\text{O}_{2-\delta}$ impregnated $\text{La}_{0.57}\text{Sr}_{0.15}\text{TiO}_3$ anode in hydrogen*, Solid State Sciences, 35, 1, 2014.
3. **Grimaud A.**, Mauvy F., Bassat J.-M., Fourcade S., Marrony M. and Grenier J.-C., *Hydration and transport properties of the $\text{Pr}_{2-x}\text{Sr}_x\text{NiO}_{4+\delta}$ compounds as H^+ -SOFC cathode*, Journal of Materials Chemistry, 22, 31, 2012.
2. **Grimaud A.**, Mauvy F., Bassat J.-M., Fourcade S., Rocheron L., Marrony M. and Grenier J.-C., *Hydration properties and rate determining steps of the oxygen reduction reaction of perovskite-related oxides as H^+ -SOFC cathode*, Journal of the Electrochemical Society, 159, 6, 2012.
1. **Grimaud A.**, Bassat J.-M., Mauvy F., Simon P., Canizares A., Rousseau B. and Grenier J.-C., *Transport properties and in-situ Raman spectroscopy study of $\text{BaCe}_{0.9}\text{Y}_{0.1}\text{O}_{3-\delta}$ as a function of water partial pressure*, Solid State Ionics, 191, 24, 2011.

Selected Invited Conferences

- KAIST Emerging Materials e-Symposium (KAIST-EMS), Korea, November 2021
- Solid State Proton Conductors Conference (SSPC-20), Bad Aibling, Germany, September 2021
- European Fuel Cell Forum, Lausanne, Switzerland, July 2021
- 71st Annual Meeting of the International Society of Electrochemistry (ISE), Belgrade, Serbia, September 2020

- Gordon Research Conference (GRC) on Electrochemical Interfaces in Energy Conversion and Storage, Hong-Kong, June 2020
- 2nd Singapore Electrochemical Society (ECS) International Symposium on Energy Materials, Singapore, April 2020
- International Battery Association (IBA), Slovenia, March 2020
- Materials Research Meeting (MRS-J), Materials Innovation for Sustainable Development Goals, Yokohama, Japan, December 2019
- IV International School–Conference of Young Scientists: Topical Problems of Modern Electrochemistry and Electrochemical Materials Science, Moscow, Russia, September 2019
- XXI Mendeleev Congress on General and Applied Chemistry, St. Petersburg, Russia, September 2019
- 2nd Global Forum on Advanced Materials and Technologies for Sustainable Development (GFMAT-2), Toronto, Canada, July 2019
- International Conference on Electroceramics (ICE), Lausanne, Switzerland, July 2019
- Materials for Today’s Energy Challenge, Padova, Italy, June 2019
- NanoGE Fall 2018 Meeting, Torremolinos, Spain, October 2018
- ECS Fall 2018, Cancun, Mexico, September 2018
- Redox Shields Workshop, Marseille, France, September 2018
- 42nd International Conference and Expo on Advanced Ceramics and Composites, American Ceramics Society, Daytona Beach, USA, January 2018
- European Materials Research Society, Strasbourg, France, June 2017
- Material Research Society, Phoenix, USA, April 2017
- Nature Conference on Materials for Energy, Wuhan, China, June 2016
- Material Research Society, Boston, USA, November 2013

Selected Invited Lectures

- EMPA, Materials for Energy Conversion, Switzerland, October 2021
- Max Planck Institute for Solid State Research, Germany, May 2021, online seminar in honor of Prof. Joachim Maier
- Massachusetts Institute of Technology, Department of Mechanical Engineering, USA, July 2020
- North Carolina State University, Department of Materials Science and Engineering, USA, July 2020
- Centre for Solar Energy and Hydrogen Research (ZSW), Ulm, Germany, February 2020
- Cornell University, Materials Science and Engineering Department, October 2019
- University of California Los Angeles, Materials Science and Engineering Department, October 2019
- Institut de Ciencia de Materials de Barcelona (ICMAB-CSIC), Barcelona, Spain, November 2018
- GDR Solar Fuels, Paris, May 2018
- University Paris Diderot, March 2018
- University of Ulm, Germany, February 2018
- Argonne National Laboratory, USA, August 2017
- University of Gottingen, Germany, March 2016
- University of Montpellier, France, August 2015

Patents

1. WO2017025337A1 “Adaptation device for adapting an UV-Vis cuvette to perform in-situ spectroanalytical measurements in a controlled atmosphere”, L. Lutz, D. Alves Dalla Corte, A. Grimaud, J.-M. Tarascon (August 2015)

Teaching Activities

- 2021 – 2022 Paris Sciences et Lettres (PSL) – Sorbonne Université (SU), Integrative Chemistry and Innovation Program: Activation of Small Molecules (graduate level)
- 2020 – 2022 PSL-SU, Chemistry and Innovation, Smart Materials Chemistry Program: Introduction to Battery Materials (graduate level)
- 2020 – 2022 ESPCI, Introduction to the Hydrogen Economy (graduate level)
- 2019 Osaka Prefecture University, Department of Materials Science, Japan, Introduction to Electrocatalysis and Solid-State Chemistry (undergraduate and graduate levels)
- 2015 – 2018 Université de Paris, Electrochemical Energy Storage and Conversion Devices (graduate level)
- 2009 – 2011 University of Bordeaux, France, Teaching Assistant – Introduction to Chemistry in Solution (undergraduate level)

Professional Service

- Battery2030+ European Large-Scale Research Initiative (European-wide project funded at ~40M€, ~150 PIs from 25 countries):
 - Leadership Committee (Coordination and Support Action), Battery2030+
 - Leadership Committee (Coordination and Support Action), Battery Interface Genome-Material Acceleration Platform (BIG-MAP)
 - Work Package Leader, Standards and Protocols, BIG-MAP
 - Scientific Thrust Leader, Sensing in Batteries, Battery2030+
- French Network on Electrochemical Energy Storage (Réseau sur le Stockage Electrochimique de l’Energie, RS2E, 17 CNRS laboratories and 15 companies, ~100 PIs):
 - Group Leader, Interface Thrust; Scientific Council Member
- Advisory Board Chemical Science, Royal Society of Chemistry (2019 – 2021)
- Chairman workshop “Water splitting/sustainable hydrogen production” area from the European research initiative Energy-X (area from the European research initiative Energy-X), Brussels, July 2019.
- Member of the Organizing Committee IUPAC Meeting 2019, Paris, France
- Scientific Committee EMRS Meeting Nice 2019, Symposium Materials for Energy
- Scientific organization seminars Chemistry Institute, College de France, Paris
- Proposal reviewer: Swiss National Supercomputing Centre/ETH Zurich, ETH Grants, United States – Israel Binational Science Foundation, FONDECYT – Chile funding agency, European Interest Group (EIG) CONCERT-Japan Joint Call, internal proposal for the Commissariat à l’Energie Atomique (CEA), French Funding agency Agence Nationale de la Recherche (ANR), European Research Council (ERC)
- Peer reviewer: Science, Nature, Nature Materials, Nature Energy, Nature Catalysis, Nature Communications, Journal of the American Chemical Society, Energy and Environmental Science,

Angewandte Chemie, among numerous others

Awards

2018 – French Society of Chemistry (SCF) – Prize of the Chemistry for Energy Division

2017 – French National Founding Agency (ANR) Young Researcher Award (JCJC)

Advisees at Collège de France

Supervised or co-advised 8 graduate students and 7 postdoctoral researchers.

2014 – 2017 Lukas Lutz, PhD student (co-supervisor, Oxford University)

2015 – 2019 Wei Yin, PhD student (co-supervisor)

2016 – 2018 Dr. Chunzhen Yang, postdoctoral associate

2017 – 2018 Dr. Iban Azcarate, postdoctoral associate

2017 – 2019 Dr. Ronguang Zhang, postdoctoral associate

2017 – 2020 Yan Duan, PhD student (co-supervisor, NTU Singapore)

2018 – 2019 Dr. Manel Ben Osman, postdoctoral associate (co-supervisor)

2018 – 2021 Léa Droguet, PhD student (co-supervisor)

2018 – 2021 Nicolas Dubouis, PhD student

2019 – 2020 Dr. Linjie Zhang, postdoctoral associate

2019 – 2020 Dr. Marie Francine Lagadec, postdoctoral associate

2020 – 2023 Valentin Meunier, PhD student

2020 – 2023 Damien Degoulage, PhD student

2021 – 2022 Dr. Mandira Majumber, postdoctoral associate

2021 – 2024 John Brown, PhD student

Funding and Project Leadership

2020 – 2023 Battery2030+ LC-BAT-15-2020 – CSA member and participant

2020 – 2023 BIG-MAP LC-BAT-13-2020 – French coordinator

2020 – 2023 BALWISE, French ANR – Participant

2017 – 2021 MIDWAY, French ANR JCJC – Coordinator