

ERIK VERLAGE

AIM Photonics Academy - MIT

address 77 Massachusetts Ave
Bldg 24-520
Cambridge, MA 02139
phone 857.998.2822
e-mail everlage@mit.edu
website www.erikverlage.com

EDUCATION

- October 2011 - June 2017 | **California Institute of Technology**, Pasadena, CA
Ph.D. in Materials Science
Atwater Research Group, Joint Center for Artificial Photosynthesis
- Sept. 2007 - June 2011 | **Massachusetts Institute of Technology**, Cambridge, MA
Bachelor of Science in Physics

EXPERIENCE

- July 2017 - present | **AIM Photonics Academy, MIT**
Postdoctoral Associate, Educational Software Developer - Prof. Lionel C. Kimerling
Project lead on game-based learning initiative for photonic integrated circuit (PIC) design and manufacturing, culminating in the PIC Virtual Lab. Supervised teams of undergraduate students to create a library of educational simulations for integrated photonics. Assisted with the production of two MITx/EdX courses, as well as a series of interactive online learning modules.
- October 2011 - June 2017 | **Joint Center for Artificial Photosynthesis, Caltech**
PhD/Doctoral Researcher - Prof. Harry Atwater
Developed methodology for the integration of III-V semiconductors into high-efficiency photo-electrochemical devices to perform water electrolysis and CO₂ reduction for the synthesis of solar fuels. Explored the optical and electronic properties of semiconductor devices using both technology CAD and finite-difference time-domain (FDTD) simulations. Developed expertise in semiconductor cell processing for the synthesis and characterization of new architectures, culminating in three novel solar-fuel devices. Acquired a broad overview of photovoltaics, plasmonics, metamaterials, and electrochemistry.
- Sept. 2010 - July 2011 | **Photovoltaic Research Laboratory, MIT**
Research Assistant - Prof. Tonio Buonassisi
Designed and conducted experiments to accurately measure the diffusivity of nickel in silicon, with a goal of replacing silver contacts in photovoltaic solar cells with less expensive nickel contacts to reduce manufacturing costs.
- May 2010 - December 2010 | **Human Dynamics Group, MIT Media Lab**
Research Assistant - Dr. Daniel Olguin
Assisted in the implementation of high-level speech processing functions used in the Media Lab's sociometric badges, important for analyzing characteristics and evolution of conversations within a large organization. Implemented voice feature recognition software in Matlab and C++ for a new generation of sociometric badges.
- Summer 2008 | **Affective Computing Group, MIT Media Lab**
Research Assistant - Dr. Rich Fletcher, Prof. Rosalind Picard
Integrated wireless biosensors into games made with Scratch, a visual programming language created in the Media Lab, with an end goal of familiarizing autistic children with social and emotional interactions.

SKILLS

Programming	C#/C++, Python, JavaScript, HTML5/CSS, XML/JSON, MATLAB, Mathematica
Software	Proficient: Unity, GitHub, Slack, Photoshop, Adobe Illustrator, Visual Studio, Microsoft Office Familiar: Blender, Maya, Audacity, Avid Media Composer

PUBLICATIONS AND PRESENTATIONS

- 2017 | **E. Verlage**, *Fall IPSR Roadmap Conference*, October 11, 2017 .
- 2016 | X. Zhou, R. Liu, K. Sun, Y. Chen, **E. Verlage**, S. Francis, N. S. Lewis, C. Xiang, *ACS Energy Letters*, 2016, **1**, 764-770.
K. Sun, R. Liu, Y. Chen, **E. Verlage**, N. S. Lewis, C. Xiang, *Advanced Energy Materials*, 2016, **6**, 1600379.
- 2015 | **E. Verlage**, S. Hu, R. Liu, R. J. R. Jones, K. Sun, C. Xiang, N. Lewis, H. A. Atwater, Jr, *Energy and Environmental Science*, 2015, **8**, 3166-3172.
E. Verlage, S. Hu, N. S. Lewis, H. A. Atwater, Jr, *MRS Spring Meeting and Exhibit*, 2015, Stable III-V Multijunction Devices Using Hole-Conducting TiO₂ for Solar Water Splitting.
K. Sun, Y. Kuang, **E. Verlage**, B. S. Brunschwig, C. W. Tu, N. S. Lewis, *Advanced Energy Materials*, 2015, **5**, 1402276.
- 2014 | F. H. Saadi, A. I. Carim, **E. Verlage**, J. C. Hemminger, N. S. Lewis, M. P. Soriaga, *The Journal of Physical Chemistry C*, 2014, **118**, 29294-29300.
- 2013 | J. Lindroos, D. Fenning, D. Backlund, **E. Verlage**, A. Gorgulla, S. K. Estreicher, H. Savin, T. Buonassisi, *Journal of Applied Physics*, 2013, **113**, 204906.
- 2011 | A. Khayari, M. Medrano, **E. Verlage**, M. C. Velazquez-Ahumada, M. J. Freire, A. Ramos, *Journal of Applied Physics*, 2011 **110**, 064912.

OUTREACH AND EDUCATIONAL CLUBS

- 2016 - 2018 | Gamkedo Game Development Club
- 2016 | Caltech Reel Science Series - Matinee Host
- 2015 | Caltech Summer Undergraduate Research Fellowship (SURF) - Mentor
Caltech Science Saturdays Series - Matinee Host
- 2014 - 2015 | Solar Energy Activity Lab (SEAL) High School Outreach - Mentor
- Fall 2013 | Caltech Course E110: Principles of University Teaching in STEM