

W.S. Sampath

(a) Professional Preparation

Indian Institute of Technology	Chennai, India	B.Tech in Mechanical Engineering	1980
Arizona State University	Tempe, AZ	M.S. in Mechanical Engineering	1982
Arizona State University	Tempe, AZ	Ph.D. in Mechanical Engineering	1985

(b) Appointments

2011-Present	Professor, Dept. of Mechanical Engineering, Colorado State University
2009-Present	Site Director, NSF I/UCRC for Next Generation Photovoltaics
1989-2011	Associate Professor, Dept. of Mechanical Engineering, Colorado State University
1985-1989	Assistant Professor, Dept. of Mechanical Engineering, Colorado State University
1980-1985	Graduate Research Assistant, Arizona State University

(c) Products

(i) Most closely related

1. Fiducia, Thomas AM, Budhika G. Mendis, Kexue Li, Chris RM Grovenor, Amit H. Munshi, Kurt Barth, **Walajabad S. Sampath** et al. "Understanding the role of selenium in defect passivation for highly efficient selenium-alloyed cadmium telluride solar cells." *Nature Energy* 4, no. 6 (2019): 504, <https://www.nature.com/articles/s41560-019-0389-z>
2. Hemenway D, Nicholson A, Barth K, **Sampath W.** Using computational simulation to model CdS/CdTe processing in close-space sublimation. In Photovoltaic Specialist Conference (PVSC), 2015 IEEE 42nd 2015 Jun 14 (pp. 1-6). IEEE. <http://ieeexplore.ieee.org/abstract/document/7355792/>
3. Munshi, Amit H., Jason M. Kephart, Ali Abbas, Tushar M. Shimpi, Kurt L. Barth, John M. Walls, and **Walajabad Sampath**. "Polycrystalline CdTe photovoltaics with efficiency over 18% through improved absorber passivation and current collection." *Solar Energy Materials and Solar Cells* 176(2018):9-18.URL- <https://www.sciencedirect.com/science/article/pii/S0927024817306402>
4. Munshi, Amit H., Jason Kephart, Ali Abbas, John Raguse, Jean-Nicolas Beaudry, Kurt Barth, James Sites, John Walls, and **Walajabad Sampath**. "Polycrystalline CdSeTe/CdTe Absorber Cells With 28 mA/cm² Short-Circuit Current." *IEEE Journal of Photovoltaics* 8, no. 1 (2018): 310-314.URL - <http://ieeexplore.ieee.org/abstract/document/8169667/>
5. Kephart, Jason M., Anna Kindvall, Desiree Williams, Darius Kuciauskas, Pat Dippo, Amit Munshi, and **W. S. Sampath**. "Sputter-Deposited Oxides for Interface Passivation of CdTe Photovoltaics." *IEEE Journal of Photovoltaics* (2018). URL - <http://ieeexplore.ieee.org/abstract/document/8263211/>

(ii) Other Products

1. A. P. Nicholson, A. H. Munshi, and **W. S. Sampath** (2018). First Principles Approach to CdTe/Te Interface Band Alignment Using Density Functional Theory and Nonequilibrium Green's Function. *Proceedings of the 45th Photovoltaic Specialist Conference (PVSC), 2018 IEEE*.
2. Kephart JM, McCamy JW, Ma Z, Ganjoo A, Alamgir FM, **Sampath W.S.**; Band alignment of front contact layers for high-efficiency CdTe solar cells. *Solar Energy Materials and Solar Cells*. 2016 Dec31; 157:266-75. URL- <http://www.sciencedirect.com/science/article/pii/S092702481630157X>
3. Swanson, Drew E., Jason M. Kephart, Pavel S. Kobayakov, Kevin Walters, Kevan C. Cameron, Kurt L. Barth, **Walajabad S. Sampath**, Jennifer Drayton, and James R. Sites. "Single vacuum chamber with multiple close space sublimation sources to fabricate CdTe solar cells." *Journal of*

Vacuum Science & Technology A: Vacuum, Surfaces, and Films 34, no. 2 (2016): 021202. URL - <http://avs.scitation.org/doi/abs/10.1116/1.4941071>

4. Hemenway D, Sakurai H, Sampath W, Barth K. Thermal modeling of PV modules using computational simulation. In Photovoltaic Specialist Conference (PVSC), 2014 IEEE 40th 2014 Jun 8 (pp. 1344-1347). IEEE. <http://ieeexplore.ieee.org/abstract/document/6925166/>
5. Aanand Thiagarajan, **Walajabad S Sampath** (2019). Analysis of the MgZnO /CdTe interface in thin film solar cells using density functional theory, to be published in the *Proceedings of the 46th Photovoltaic Specialist Conference (PVSC), 2019 IEEE*. Winner of the best poster award at the conference.

1.

(d) Synergistic Activities:

1. Founded the NSF Industry University Co-Operative Research Center (I/UCRC) on Next Generation Photovoltaics in 2009. Currently the I/UCRC has three university sites and 20 Industrial members paying full membership, including leaders in photovoltaics (First Solar), energy (Statoil) and defense (Naval Postgraduate School)
2. CdTe PV has been the focus of research since 1991. The research has contributed directly and significantly to the massive growth of the CdTe PV industry. Nearly \$370 million in private and Government investment resulted from the research.
3. Demonstrated highest efficiency CdTe photovoltaic devices (18.3% independently verified) among academic institutions and national labs. Further improved to 20.14% in 2019.
4. Recent DOE awards on Photovoltaics R &D (PVRD).
5. Close collaboration with three International Universities: Loughborough University in UK, Amrita University in India and Asian Institute of Technology in Thailand. MOUs with all three institutions. Awarded Art Corey Outstanding International Contributions Award (2017) by Colorado State University College of Engineering.