

Abdulkerim Gok – Résum 

| | | | |
|----------------------|-------------------------------------------------------------|---------------|--------------------|
| Address | Gebze Technical University, Gebze, Kocaeli, 41400 Turkey | Office | +90 (262) 605 2657 |
| Date of Birth | 9 th May 1985 | Mobile | +90 (536) 665 2516 |
| Nationality | Turkish | Email | agok@gtu.edu.tr |

Personal Profile

I am a dedicated researcher specializing in data analytics for the lifetime and degradation science of photovoltaic systems. My expertise lies in evaluating and optimizing photovoltaic modules and materials. With a strong foundation in exploratory data analysis and experience in both real-world and accelerated weathering testing, I am passionate about developing degradation models to understand how environmental factors impact module performance.

My aim is to extract actionable insights from complex datasets to enhance the durability, reliability, and performance of photovoltaic technologies, ultimately contributing to sustainable energy solutions. I am eager to collaborate with interdisciplinary teams to drive innovation and improve the resilience of solar energy systems in a changing environment.

Education

2011-2016 PhD in Materials Science and Engineering - Case Western Reserve University, Cleveland, OH

2009-2011 MSc in Chemical Engineering - Columbia University, New York, NY

2008-2009 ESL (English as a Second Language) Training - ESL Center, New York, NY

2002-2007 BSc in Materials Science and Engineering - Anadolu University, Eskisehir, Turkey

Employment

Sep 2020 - Present Gebze Technical University, Gebze, Kocaeli, Turkey
Assistant Professor

Sep 2016 - Sep 2020 Gebze Technical University, Gebze, Kocaeli, Turkey
Research Associate

Sep 2011 - Jan 2016 Case Western Reserve University, Cleveland, OH
Research Assistant

Teaching Experience

Undergraduate Level

INF 101: Introduction to Computing
FBE 501: Scientific Research Techniques and Publication Ethics
ENVE 213: Materials Science for Environmental Engineers
CED 431: Materials Science for Chemical Engineers
MBM 104: Materials Science for Electrical and Electronics Engineers
MSE 482: Special Topics in Materials Science
MSE 434: Photovoltaic Energy Materials and Operating Principles
MSE 415: Materials and the Environment

Graduate Level

MSE 539: Photovoltaic Energy Materials and Systems
MSE 550: Materials Data Science

Projects

Nov 2020 - TUBITAK 1071 / Solar ERA.Net Cofund 2
Mar 2024 - *PV40+: PV Module With an Enhanced Lifetime of More Than 40 Years and Reduced Environmental Impact*

Jan 2018 - EU COST Action PEARL PV (CA 61235)
Apr 2022 - *Performance and Reliability of Photovoltaic Systems: Evaluations of Large-Scale Monitoring Data*

Publications

Journal Articles

1 - French, R. H., Podgornik, R., Peshek, T. J., Bruckman, L. S., Xu Y., Wheeler, N.R., Gok, A., Hu, Y., Hos-sain, M. A., Gordon, D. A., Zhao, P., Sun, J., Zhang, G. Q., “Degradation Science: Mesoscopic Evolution and Temporal Analytics of Photovoltaic Energy Materials”, *Current Opinion in Solid State and Materials Science*, 2015, <http://dx.doi.org/10.1016/j.cossms.2014.12.008>.

2 - Gok, A., Ngendahimana, D. K., Fagerholm, C. L., French, R. H., Sun, J., Bruckman, L. S., “Predictive Models of Poly(ethylene-terephthalate) Film Degradation Under Multi-Factor Accelerated Weathering Exposures”, *PLoS ONE*, 2017, <https://doi.org/10.1371/journal.pone.0177614>.

3 - Klinke, A. G., Gok, A., Ifeanyi, S. I., Bruckman, L. S., “A Non-Destructive Method for Crack Quantification in Photovoltaic Backsheets Under Accelerated and Real-World Exposures”, *Journal of Polymer Degradation and Stability*, 2018, <https://doi.org/10.1016/j.polymdegradstab.2018.05.008>.

4 - Gok, A., Gordon, D. A., Burns, D. M., Fowler, S. P., French, R. H., Bruckman, L. S., “Reciprocity and Spectral Effects of the Degradation of Poly(ethylene terephthalate) Under Accelerated Weathering Exposures”, *Journal of Applied Polymer Science*, 2019, <https://doi.org/10.1002/app.47589>.

5 - Gok, A., Fagerholm, C. L., French, R. H., Bruckman, L. S., “Temporal Evolution and Pathway Models of Poly(Ethylene-Terephthalate) Degradation under Multi-Factor Accelerated Weathering Exposures”, *PLoS ONE*, 2019, <https://doi.org/10.1371/journal.pone.0212258>.

6 - Gok, A., Ozkalay, E., Friesen, G., Frontini, F., "The Influence of Operating Temperature on the Performance of BIPV Modules", IEEE Journal of Photovoltaics, 2020, <https://doi.org/10.1109/JPHOTOV.2020.3001181>.

7 - Gok, A., Ozkalay, E., Friesen, G., Frontini, F., "Power Loss Modes of BIPV Modules: An Analytical Approach using Outdoor I-V Curves", IEEE Journal of Photovoltaics, 2021, <https://doi.org/10.1109/JPHOTOV.2021.3060719>.

8 - Aghaei, M., Fairbrother, A., Gok, A., Ahmad, S., Kazim, S., Lobato, K., Oreski, G., Reinders, A., Schmitz, J., Theelen, M., Yilmaz, P., Kettle, J., "Reliability and Degradation Phenomena in Photovoltaic Modules", Renewable and Sustainable Energy Reviews, 2022, <https://doi.org/10.1016/j.rser.2022.112160>.

9 - Gok, A., "Investigation of Turkey's Climate for Service Lifetime of Photovoltaic Modules: A Mapping Approach", GU Journal of Science - Part A: Engineering and Innovation, 2023, <https://doi.org/10.54287/gujisa.1357247>.

10 - Pac, A. B., Gok, A., "Assessing the Environmental Benefits of Extending the Service Lifetime of Solar Photovoltaic Modules", Global Challenges, 2024, <https://doi.org/10.1002/gch2.202300245>.

11 - Genc, M., Gok, A., "Evaluating the Impact of Edge-Seal on the Performance of Double-Glass Solar Photovoltaic Modules", GU Journal of Science - Part A: Engineering and Innovation, 2024, <https://doi.org/10.54287/gujisa.xxxxxxx>.

Conference Proceedings and Meetings

1 - Felder, T. C., Gambogi, W. J., Kopchick, J. G., Peacock, R. S., Stika, K. M., Trout, T. J., Bradley, A. Z., Hamzavtehrany, B., Gok, A., French R.H., Fu, O., Hu, H., "Optical Properties of PV Backsheets: Key Indicators of Module Performance and Durability", Proc. SPIE 9179, Reliability of Photovoltaic Cells, Modules, Components, and Systems VII, San Diego, CA., August 2014, <http://dx.doi.org/10.1117/12.2062063>.

2 - Wheeler, N. R., Xu, Y., Gok, A., Kidd, I. V., Bruckman, L. S., Sun, J., French, R. H., "Data Science Study Protocols for Investigating Lifetime and Degradation of PV Technology Systems", IEEE 40th Photovoltaic Specialist Conference (PVSC), Denver, CO., June 2014.

3 - Gok, A., Fagerholm, C. L., Gordon, D. A., Bruckman, L. S., French, R. H., "Degradation of Poly(ethylene-terephthalate) under Accelerated Weathering Exposures", IEEE 42nd Photovoltaic Specialist Conference (PVSC), New Orleans, LA., July 2015, <http://dx.doi.org/10.1109/PVSC.2015.7355601>.

4 - Wheeler, N. R., Gok, A., Peshek, T. J., Bruckman, L. S., Goel, N., Zabiyya, D., Fagerholm, C. L., Dang, T., Alcantara, C., Terry, M. L., French, R. H., "A Data Science Approach to Understanding Photovoltaic Module Degradation", Proc. SPIE 9563, Reliability of Photovoltaic Cells, Modules, Components, and Systems VIII, San Diego, CA., August 2015, <http://dx.doi.org/10.1117/12.2209204>.

5 - Wang, Y., Gok, A., Fagerholm, C. L., French, R. H., Bruckman, L. S., "Development of Predictive and Semi-gSEM Models of Backsheet Degradation under Multifactor Accelerated Weathering Exposures", ANTEC 2016, Society of Plastic Engineers (SPE), ISBN: 978-0-692-71961-9, pp: 575-580, Indianapolis, IN., May 2016.

6 - Gordon, D. A., Gok, A., Meyer, C. W., Fagerholm, C. L., Sweet N. W., Denoyer, L., Bruckman, L. S., French, R. H., "Characterizing the Weathering Induced Haze Formation and Gloss Loss of Poly(ethylene-terephthalate) via MaPd:RTS Spectroscopy", Proc. SPIE 9938, Reliability of Photovoltaic Cells, Modules, Components, and Systems IX, San Diego, CA., August 2016, <http://dx.doi.org/10.1117/12.2238295>.

7 - Klinke, A. G., Gok, A., Ifeanyi, S. I., French, R. H., Bruckman, L. S., "Degradation of Photovoltaic Backsheet Materials Under Multi-factor Accelerated UV Light Exposures", Proc. SPIE 10370, Reliability of Photovoltaic Cells, Modules, Components, and Systems X, San Diego, CA., August 2017, <http://dx.doi.org/10.1117/12.2274108>.

8 - Klinke, A. G., Gok, A., Ifeanyi, S. I., Bruckman, L. S., "An Automated Algorithm for Quantifying Cracks

in Photovoltaic Backsheets Under Accelerated and Real-World Exposures”, 7th World Conference on Photovoltaic Energy Conversion (WCPEC) (A Joint Conference of 45th IEEE PVSC, 34th EU PVSEC, and 28th PVSEC), Waikoloa, HI., June 2018, <http://dx.doi.org/10.1109/PVSC.2018.8547407>.

9 - Barretta, C., Oreski, G., Yang, M., Schaffler, R., Brandstatter, A., Lechner, P., Geyer, D., Wittfoth, J., Gok, A., Pac, A. B., “PV40+ Project: New Encapsulants and Testing Strategies to Achieve 40 Years of Lifetime”, 38th European Photovoltaic Solar Energy Conference and Exhibition (EU PVSEC), Virtual, September 2021.

10 - Barretta, C., Helfer, E., Christoeffl, P., Macher, A., Bredacs, M., Gok, A., Oreski, G., “Chemical and Morphological Characterization of PVDF Films used for Photovoltaic Backsheets”, 8th World Conference on Photovoltaic Energy Conversion (WCPEC) (A Joint Conference of 50th IEEE PVSC, 39th EUPVSEC, and 32th PVSEC), Milano, Italy, September 2022.

11 - Barretta, C., Brandstatter, A., Lechner, P., Geyer, D., Wittfoth, J., Gok, A., Pac, A. B., Oreski, G., “Design and Testing of PV Modules Based on Glass-Glass Configuration to Achieve Extended Lifetime”, NREL PV Reliability Workshop, Virtual, February 2022.

12 - Genc, M., Gok, A., “Modeling of Degradation Kinetics in Photovoltaic Modules under Damp Heat Testing”, 13th International 100

13 - Yenigul, V. A., Gok, A., “The Effect of Local Climate Conditions on the Service Lifetime of Photovoltaic Modules”, 13th International 100

14 - Pac, A. B., Gok, A., “Extending Photovoltaic Power Plant Service Lifetime: Module Design Innovations and Implications for Environmental Impact”, 13th International 100

15 - Lindig, S., Ascencio-Vásquez, J., Leloux, J., Moser, D., Aghaei, M., Fairbrother, A., Gok, A., Ahmad, S., Kazim, S., Lobato, K., van Sark, WJGHM., Pearsall, N., Burduhos, B.G., Raghoebarsing, A., Oreski, G., Schmitz, J., Theelen, M., Yilmaz, P., Kettle, J., Reinders, A., “Performance and Degradation in Silicon PV Systems under Outdoor Conditions in Relation to Reliability Aspects of Silicon PV Modules–Summary of Results of COST Action PEARL PV”, IEEE 50th Photovoltaic Specialist Conference (PVSC), San Juan, Puerto Rico, June 2023, <https://dx.doi.org/10.1109/PVSC48320.2023.10359742>.

16 - Barretta, C., Meinhart, L., Krebs, H., Wittfoth, J., Brandstatter, A., Geyer, D., Einhaus, R., Gok, A., Oreski, G., “Design and Testing of PV Modules Based on Glass/Glass Configuration to Achieve Extended Lifetime”, 40th European Photovoltaic Solar Energy Conference and Exhibition (EU PVSEC 2023), Lisbon, Portugal, September 2023.

17 - Einhaus, R., Kreiening, J., Engel, M., Geyer, D., Oreski, G., Barretta, C., Brandstatter, A., Gok, A., Krebs, H., “Test and Evaluation of Combinations of Encapsulant Materials towards a Long Service Lifetime of PV Modules: PV 40 Plus”, 40th European Photovoltaic Solar Energy Conference and Exhibition (EU PVSEC 2023), Lisbon, Portugal, September 2023.

18 - Gok, A., Yenigul, V. A., Barretta, C., Oreski, G., Brandstatter, A., Geyer, D., Einhaus, R., “Equivalent Damp Heat Testing Time Map for Service Lifetime of Photovoltaic Modules”, 40th European Photovoltaic Solar Energy Conference and Exhibition (EU PVSEC 2023), Lisbon, Portugal, September 2023.

19 - Kaplan, U., Karakurt, V., Citrak, T., Zigindere, O., Birol, F., Gok, A., “The Effect of Cryogenic Heat Treatment on the Microstructure and Mechanical Properties of CuAl14Fe5Mn2Co Aluminum Bronze”, 3rd International Materials Technologies and Metallurgy Conference, Istanbul, Turkey, October 2023.

20 - Gok, A., “Toward Sustainable PV Systems: Evaluating Alternative Encapsulant Materials For Enhanced Reliability”, 4th International Conference on Photovoltaic Science and Technologies (PVCON2024), Ankara, Turkey, July 2024.

21 - Barretta, C., Meinhart, L., Brandstaetter, A., Geier, D., Einhaus, R., Gok, A., Oreski, G., “UV Exposure of Glass/Glass Coupons With Edge Seal and Different Encapsulants”, 41th European Photovoltaic Solar Energy Conference and Exhibition (EU PVSEC 2024), Vienna, Austria, September 2024.

Book Chapter(s)

1 - Gok, A., Gordon, D. A., Wang, M., French, R. H., Bruckman, L. S., “Chapter 3: Degradation Science of, and Pathways in, PV Systems”, in *Durability and Reliability of Polymers and Other Materials in Photovoltaic Modules*, pages 47-95, Series: *Plastics Design Library*, Editors: Yang, H. E., French, R. H., Bruckman, L. S., print ISBN: 9780128115459, ebook ISBN: 9780128115466, Publisher: Elsevier Science, June 2019, <https://doi.org/10.1016/B978-0-12-811545-9.00003-3>.

Book Editorship

1 - Yuksel, E., Gok, A., Eyvaz, M., “Special Topics in Renewable Energy Systems”, ISBN: 9781789239805, Print ISBN: 9781789239799, InTechOpen, October 2018, <https://doi.org/10.5772/intechopen.73635>.

2 - Eyvaz, M., Gok, A., Yuksel, E., “Energy-Efficient Approaches in Industrial Applications”, ISBN: 9781789855203, Print ISBN: 9781789855197, Publisher: InTechOpen, February 2019, <https://doi.org/10.5772/intechopen.74268>.

3 - Gok, A., “Reliability and Ecological Aspects of Photovoltaic Modules”, ISBN: 9781789848236, Print ISBN: 9781789848229, Publisher: InTechOpen, Jan 2020, <http://doi.org/10.5772/intechopen.82613>.

Report Contributions

1 - EU COST Action PEARL PV (CA 61235), “Country Reports 2018”, Editors: Farkas, I., Atsu, D., Raghoebarsing, A., Boddaert, S., Moser, D., Reinders, A., print ISBN: 9789036551076, ebook ISBN: 9789036551083, Publisher: University of Twente, The Netherlands, December 2020, <https://doi.org/10.3990/1.9789036551083>.

2 - EU COST Action PEARL PV (CA 61235), “Country Reports 2020”, Editors: Farkas, I., Raghoebarsing, A., Atsu, D., Shirazi, E., Boddaert, S., Moser, D., Pearsall, N., Reinders, A., print ISBN: 9789036553612, ebook ISBN: 9789036553629, Publisher: University of Twente, The Netherlands, April 2022, <https://doi.org/10.3990/1.9789036553629>.

Invited Talks

1 - Gok, A., “Machine Learning Approaches for PV Reliability Assessment”, 9th SOPHIA Workshop on PV Module Reliability, Organizer and Host: Dr. Karl-Anders Weiss of Fraunhofer ISE and Dr. Gernot Oreski of PCCL, Graz, Austria, May 28-29, 2019.

2 - Gok, A., “PV Degradation Pathway Models: netSEM (Network Structural Equation Modeling)”, Training School: Evaluation of the Performance Degradation of PV Systems, EU COST Action PEARL PV (CA 61235), Malta Collage of Arts, Science, and Technology (MCAST), Malta, Oct 14-18, 2019.

3 - Gok, A., “The Influence of Operating Temperature on the Performances of Different BIPV Modules: Performance Loss Rate Determination using RdTools”, Training School: Evaluation of the Performance Degradation of PV Systems, EU COST Action PEARL PV (CA 61235), Malta Collage of Arts, Science, and Technology (MCAST), Malta, Oct 14-18, 2019.

4 - Gok, A., “A Data Science Approach to Understanding PV Module Degradation”, 4th Management Committee Meeting and Working Group Workshops, EU COST Action PEARL PV (CA 61235), Utrecht Science Park, Utrecht, The Netherlands, Feb 24-27, 2020.

Software Development

1 - Ma, J., Wheeler, N. R., Xu, Y., Du, W., Gok, A., Sun, J., “gSEM: Semi-Supervised Generalized Structural Equation Modeling”, The Comprehensive R Archive Network (CRAN), 2016, <https://CRAN.R-project.org/package=gSEM>.

2 - Huang, W-H., Wheeler, N. R., Klinke, A. G., Xu, Y., Du, W., Gok, A., Gordon, D. A., Wang, Y., Liu, J., Curran,

A., Fada, J., Ma, X., Braid, J., Bruckman, L. S., French, R. H., “netSEM: Network Structural Equation Modeling”, The Comprehensive R Archive Network (CRAN), 2018, <https://CRAN.R-project.org/package=netSEM>.

3 - Wang, M., Burleyson, T. J., Liu, J., Curran, A. J., Gok, A., Schneller, E. J., Davis, K. O., Braid, J. L., French, R. H., “SunsVoc: Constructing Suns-Voc from Outdoor Time-Series I-V Curves”, The Comprehensive R Archive Network (CRAN), 2020, <https://CRAN.R-project.org/package=SunsVoc>.

4 - Gok, A., “Turkish Localization for BibLaTeX Bibliography (version 3.15)”, The Comprehensive TeX Archive Network (CTAN), 2020, <https://ctan.org/pkg/biblatex>.