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PERSONAL

Date of Birth	1984
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EDUCATION

2007-2012	University of Connecticut, Electrical and Computer Engineering, Ph.D.
2002-2007	Bilkent University, Electrical and Electronics Engineering, B.S.

ACADEMIC POSITIONS

01/2017	Assistant Profesor, Department of Electrical and Electronics Engineering, Atilim University, Turkey
11/2013	Research Associate, National Nanotechnology Research Center (UNAM), Bilkent University, Turkey
01/2015-01/2017	Assistant Profesor, Department of Electrical and Electronics Engineering, Antalya Bilim University, Turkey

RESEARCH INTERESTS

1	Optical sensing applications, Infrared emitters, Infrared absorption spectroscopy, Phase-change memory devices, Tunable photonic surfaces, Electrical characterization of peptides

PUBLICATIONS

1	G. Bakan, S. Ayas, M. Serhatlioglu, C. Elbuken, A. Dana, “Invisible Thin-film Patterns with Strong Infrared Emission as an Optical Security Feature,” Advanced Optical Materials, 1800613 (2018)
2	G. Bakan, S. Ayas, A. Dana “Tunable enhanced infrared absorption spectroscopy surfaces based on thin VO_2 films” Optical Materials Express, 8(8), 2190-2196 (2018).
3	S. Muneer, J. Scoggin, F. Dirisaglik, L. Adnane, A. Cywar, G. Bakan, K. Cil, C. Lam, H. Silva, and A. Gokirmak “Activation energy of metastable amorphous $Ge_2Sb_2Te_5$ from room temperature to melt” AIP Advances, 8, 065314 (2018).
4	S. Ayas, G. Bakan, E. Ozgur, K. Celebi, G. Torunoglu, A. Dana “Colorimetric Detection of Ultrathin Dielectrics on Strong-Interference Coatings,” Optics Letters, 43 (6), 1379-1382 (2018).
5	A. Khalily, H. Usta, M. Ozdemir, G. Bakan, B. Dikecoglu, C. Edwards-Gayle, J. Hutchinson, I. Hamley, A. Dana and M. O. Guler “Design and Fabrication of Supramolecular Semiconductor Nanowires Formed by Benzothienobenzothiophene (BTBT)-Conjugated Peptides” Nanoscale 10, 9987-9995 (2018).
6	I. Arioz, O. Erol, G. Bakan, F. B. Dikecoglu, A. E. Topal, M. Urel, A. Dana, A. B. Tekinay, M. O. Guler “Biocompatible Electroactive Tetra(aniline)-Conjugated Peptide Nanofibers for Neural Differentiation” ACS Applied Materials & Interfaces 10(1), 308–317 (2018).
7	M. A. Khalily, G. Bakan, B. Kucukoz, A. E. Topal, A. Karatay, H. G. Yaglioglu, A. Dana, M. O. Guler “Fabrication of Supramolecular n/p- Nanowires via Coassembly of Oppositely Charged Peptide-Chromophore Systems in Aqueous Media” ACS Nano 11 (7), 6881–6892 (2017).
8	G. Bakan, S. Ayas, E. Ozgur, K. Celebi, A. Dana “Thermally Tunable Ultrasensitive Infrared Absorption Spectroscopy Platforms Based on Thin Phase-Change Films” ACS Sensors, 1(12), 1403–1407 (2016).
9	G. Bakan, B. Gerislioglu, F. Dirisaglik, Z. Jurado, L. Sullivan, A. Dana, C. Lam, A. Gokirmak, H. Silva “Extracting the temperature distribution on a phase-change memory cell during crystallization” Journal of Applied Physics 120, 164504 (2016).
10	G. Bakan, S. Ayas, T. Saidzoda, K. Celebi, A. Dana “Ultrathin phase-change coatings on metals for electrothermally tunable colors” Applied Physics Letters 109, 071109 (2016).
11	S. Ayas, G. Bakan, E. Ozgur, K. Celebi, A. Dana “Universal Infrared Absorption Spectroscopy Using Uniform Electromagnetic Enhancement” ACS Photonics 3(3), (2016).
12	S. Ayas, G. Bakan, A. Dana “All-aluminum hierarchical plasmonic surfaces in the infrared,” Optical Materials Express 6(3), 823-880 (2016).
13	F. Dirisaglik, G. Bakan, Zoila Jurado, Sadid Muneer, Mustafa Akbulut, Jonathan Rarey, Lindsay Sullivan, Maren Wennberg, Adrienne King, Lingyi Zhang, Rebecca Nowak, Chung Lam, Helena Silva and Ali Gokirmak, “High Speed, High Temperature Electrical Characterization of Phase Change Materials: Metastable Phases, Crystallization Dynamics, and Resistance Drift,” Nanoscale, 7(40), 16625-16630 (2015).
14	S. Ayas, G. Bakan, A. Dana “Rounding corners of nano-square patches for multispectral plasmonic metamaterial absorbers,” Optics Express 23(9), 11763-11770 (2015).
15	I. Orak, M. Urel, G. Bakan, A. Dana “Memristive behavior in a junctionless flash memory cell,” Applied Physics Letters 106, 233506 (2015).
16	S. Ayas, A. E. Topal, A. Cupallari, H. Guner, G. Bakan, A. Dana “Exploiting Native Al_2O_3 for Multispectral Aluminum Plasmonics,” ACS Photonics 1(12), 1313–1321 (2014).
17	G. Bakan, A. Gokirmak, H. Silva, “Suppression of thermoelectric Thomson effect in silicon microwires under large electrical bias and implications for

	phase-change memory devices," Journal of Applied Physics 116, 234507 (2014).
18	A. Faraclas, G. Bakan, N. Williams, A. Gokirmak, H. Silva. "Modeling of thermoelectric effects in phase-change memory cells." IEEE Transactions on Electron Devices, 61, 2, 372-387 (2014).
19	F. Dirisaglik, G. Bakan, A. Faraclas, A. Gokirmak, H. Silva, "Numerical Modeling of Thermoelectric Thomson Effect in Phase Change Memory Bridge Structures," Intl. Journal of High Speed Electronics and Systems, 23 (01n02), 1450004 (2014).
20	G. Bakan, N. Khan, H. Silva, A. Gokirmak. "High-temperature thermoelectric transport at small scales: Thermal generation, transport and recombination of minority carriers," Sci. Rep. 3, 2724 (2013).
21	G. Bakan, L. Adnane, A. Gokirmak, H. Silva, "Extraction of temperature dependent electrical resistivity and thermal conductivity from silicon microwires self-heated to melting temperature," Journal of Applied Physics vol. 112, 063527 (2012).
22	H. Silva, G. Bakan, A. Cywar, N. Williams, N. Henry, F. Dirisaglik, A. Gokirmak, "Crystallization of silicon microstructures through rapid self-heating for high-performance electronics on arbitrary substrates," Nanoscience and Nanotechnology Letters 4, 970-976 (2012).
23	H.K. Peng, K. Cil, A. Gokirmak, G. Bakan, Y. Zhu, C.S. Lai, C.H. Lam, H. Silva, "Thickness dependence of the amorphous-cubic and cubic-hexagonal phase transition temperatures of GeSbTe thin films on silicon nitride," Thin Solid Films, 520, 2976 (2012).
24	G. Bakan, N. Khan, A. Cywar, K. Cil, M. Akbulut, A. Gokirmak, H. Silva, "Self-heating of silicon microwires: Crystallization and thermoelectric effects," Journal of Materials Research 26, 1061 (2011). *Invited Feature Paper.*
25	A. Cywar, F. Dirisaglik, M. Akbulut, G. Bakan, S. Steen, H. Silva, A. Gokirmak, "Scaling of silicon phase-change oscillators," IEEE - Electron Device Letters 32, 1486 (2011).
26	A. Cywar, G. Bakan, H. Silva and A. Gokirmak, "Nanosecond pulse generation in a silicon microwire," IEEE - Electron Device Letters 31, 1362 (2010).
27	G. Bakan, A. Cywar, H. Silva and A. Gokirmak, "Melting and crystallization of nanocrystalline silicon microwires through rapid self-heating," Applied Physics Letters, 94, 251910 (2009).
28	A. Cywar, G. Bakan, C. Boztug, H. Silva and A. Gokirmak, "Phase-change oscillations in silicon microwires," Applied Physics Letters, 94, 072111 (2009).

PROJECTS

1	"Electro-thermally tunable, micro scale, reversible, non-volatile color pixels," Principal Investigator, Research budget: 250000 TL (TUBITAK 3501), 2018-2020
2	"Tuning strong-interference-effect based infrared resonator surfaces via crystallizing top amorphous $Ge_2Sb_2Te_5$ films," Principal Investigator, Research budget: 60000 TL (TUBITAK 3001), June 2015 - December 2016
3	"Crystallization dynamics in phase-change memory devices", Principal Investigator, Research budget: 25000 TL (TUBITAK 2232), March 2014 – March 2016.

PATENTS

1	G. Bakan, S. Ayas, A. Dana, "Infrared emission patterns imperceptible to the naked eye", TPO application number: 2017/22238.

CONFERENCE PRESENTATIONS

1	G. Bakan, S. Ayas, E. Ozgur, K. Celebi, A. Dana, “Interference Coatings for Infrared Spectroscopy and Colorimetric Sensing” OSA Advanced Photonics Congress, NoM3J.7, 2018.
2	G. Bakan, S. Ayas, E. Ozgur, K. Celebi, A. Dana, “Phase-Change Films for Thermally-Tunable Ultrasensitive Infrared Absorption Spectroscopy” Materials Research Society Spring Meeting, ED11.12.03, 2017.
3	G. Bakan, S. Ayas, E. Ozgur, K. Celebi, A. Dana, “Ultrasensitive Surface Enhanced Infrared Absorption Spectroscopy on Patternless, Uniform Field Enhancement Surfaces” Materials Research Society Spring Meeting, ED13.9.06, 2017.
4	G. Bakan, S. Ayas, E. Ozgur, K. Celebi, A. Dana, “Pattern-Free, CMOS Compatible Infrared-Absorption-Spectroscopy Surfaces for Sensing Bio-Molecule Monolayers,” 3rd International Congress on Biosensors, OP0101, 2016.
5	G. Bakan, S. Ayas, T. Saidzoda, A. Dana, “Thermal Tuning of Colors Generated by Ultrathin Phase-Change Films on Metal Mirrors” Materials Research Society Spring Meeting, MD4.10.04, 2016.
6	G. Bakan, “Suppressing the Effect of Thermoelectric Heating in Phase-Change Memory Cells” Materials Research Society Spring Meeting, Y6.04, 2015.
7	G. Bakan, N. Khan, A. Gokirmak, H. Silva, “High-temperature thermoelectric transport at small scales” Materials Research Society Fall Meeting, BB1.4, 2013.

CITATIONS

Sum of times cited without self-citations (ISI Web of Science):	142
H-index (ISI Web of Science):	9

TEACHING

1	EE 103, EE 209, EE 212, EE 313, EE 319, EE 493/494 (ATILIM UNIV.)
2	PHYS 101, EE 301, EE 302, EE 404 (ANTALYA BILIM UNIV.)