

## Assoc. Prof. SERDAR KOCAMAN

### Personal Information

Email: skocaman@metu.edu.tr

### Education Information

Doctorate, Columbia University, Mühendislik, Elektrik Mühendisliği, United States Of America 2008 - 2011

Post Graduate, Columbia University, Mühendislik, Elektrik Mühendisliği, United States Of America 2007 - 2008

Under Graduate, Boğaziçi Üniversitesi, Mühendislik Fakültesi, Elektrik-Elektronik Mühendisliği Bölümü, Turkey 2002 - 2007

Undergraduate Double Major, Boğaziçi Üniversitesi, Fen-Edebiyat Fakültesi, Fizik Bölümü, Turkey 2002 - 2007

### Dissertations

Doctorate, On-chip Group and Phase Velocity Control for Classical and Quantum Optical Devices, Columbia University In The City Of New York, 2011

### Research Areas

Electrical and Electronics Engineering, Electronic, Nanotechnology, Optics and Photonics, Engineering and Technology

### Academic Titles / Tasks

Assistant Professor, Middle East Technical University, Faculty of Engineering, Elektrik-Elektronik Mühendisliği Bölümü, 2018 - Continues

Assistant Professor, Middle East Technical University, Faculty of Engineering, Elektrik-Elektronik Mühendisliği Bölümü, 2014 - 2018

### Advising Theses

Kocaman S., Barrier engineering for high-performance nBn infrared photodetectors, Doctorate, F.UZGUR(Student), 2020

Kocaman S., A ONE DIMENSIONAL SLOT MODE PHOTONIC CRYSTALNANOBEAM CAVITY DESIGN FOR OPTICAL BIO-SENSINGAPPLICATIONS, Post Graduate, M.ERDİL(Student), 2020

Kocaman S., Comparison of multi-cavity arrays for on-chip WDM applications, Post Graduate, H.ERDİNÇ(Student), 2019

Kocaman S., Simulation of dynamical refractive index change in on-chip optical devices, Post Graduate, A.ASLAN(Student), 2019

Kocaman S., High operating temperature mid-wave infrared hgcdte photodiode design, Post Graduate, E.YURTSEVEN(Student), 2019

KOCAMAN S., High performance HgCdTe photodetector desings via dark current suppression, Post Graduate, Y.ÖZER(Student), 2018

KOCAMAN S., Integrated optical modulators based on photonic crystals, Post Graduate, A.GÖVDELİ(Student), 2018

KOCAMAN S., High performance near/short wavelength infrared megapixel InGaAs focal plane array fabrication development and new design proposals, Post Graduate, U.KARACA(Student), 2018

KOCAMAN S., YÜCE E., Controlling light inside a multi-mode fiber by wavefront shaping, Post Graduate, H.İBRAHİM(Student), 2018  
Bek A, Kocaman S., Radiometry-based range prediction for mid- and long-wave infrared imaging systems, Post Graduate, B.BERKAN(Student), 2018  
KOCAMAN S., Photonic integrated circuit components with amorphous structures, Post Graduate, M.CAN(Student), 2018  
KOCAMAN S., YÜCE E., Zero-n gap design via modulation of hexagonal photonic crystal lattice, Post Graduate, S.MORADI(Student), 2017

## Articles Published in Journals That Entered SCI, SSCI and AHCI Indexes

- **Advanced Design of Schottky Photodiodes in Bulk CMOS for High Speed Optical Receivers**  
Orsel O. E. , ERDİL M., KOCAMAN S.  
IEEE JOURNAL OF QUANTUM ELECTRONICS, vol.56, 2020 (Journal Indexed in SCI)
- **SWIR nightglow radiation detection around room temperature with depletion-engineered HgCdTe on alternative substrates**  
Livanelioglu C., Ozer Y., KOCAMAN S.  
JOURNAL OF THE OPTICAL SOCIETY OF AMERICA B-OPTICAL PHYSICS, vol.37, pp.56-66, 2020 (Journal Indexed in SCI)
- **Quantitative analysis of nonlinear dynamics of quantum light transmission in strongly coupled quantum dot-cavity systems**  
Tugen A., KOCAMAN S.  
OPTICS COMMUNICATIONS, vol.436, pp.146-150, 2019 (Journal Indexed in SCI)
- **High-Q Slot-Mode Photonic Crystal Nanobeam Cavity Biosensor With Optomechanically Enhanced Sensitivity**  
Erdil M., Ozer Y., Kocaman S.  
IEEE JOURNAL OF SELECTED TOPICS IN QUANTUM ELECTRONICS, vol.25, 2019 (Journal Indexed in SCI)
- **Optimization of in-device depleted passivation layer for InGaAs photodetectors**  
Çırçır K., Dolas M. H. , Kocaman S.  
Infrared Physics and Technology, vol.97, pp.360-364, 2019 (Journal Indexed in SCI)
- **Barrier engineering for HgCdTe unipolar detectors on alternative substrates**  
Uzgur F., Kocaman S.  
INFRARED PHYSICS & TECHNOLOGY, vol.97, pp.123-128, 2019 (Journal Indexed in SCI)
- **InGaAs nBn SWIR detector design with lattice-matched InAlGaAs barrier**  
UZGUR F., KOCAMAN S.  
TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES, vol.27, pp.1-10, 2019 (Journal Indexed in SCI)
- **All InGaAs Unipolar Barrier Infrared Detectors**  
Uzgur F., Karaca U., Kizilkan E., Kocaman S.  
IEEE TRANSACTIONS ON ELECTRON DEVICES, vol.65, pp.1397-1403, 2018 (Journal Indexed in SCI)
- **Stability Formulation for Integrated Opto-mechanic Phase Shifters**  
Ozer Y., Kocaman S.  
SCIENTIFIC REPORTS, vol.8, 2018 (Journal Indexed in SCI)
- **Integrated Optical Modulator Based on Transition between Photonic Bands**  
Gövdeli A., Sarihan M. C. , Karaca U., Kocaman S.  
SCIENTIFIC REPORTS, vol.8, 2018 (Journal Indexed in SCI)
- **Fully Depleted InP Nano-Layer for In-Device Passivation of InGaAs SWIR Detectors**  
Dolas M. H. , KOCAMAN S.  
IEEE ELECTRON DEVICE LETTERS, vol.38, pp.1692-1695, 2017 (Journal Indexed in SCI)
- **Zero average index design via perturbation of hexagonal photonic crystal lattice**  
Moradi S., GÖVDELİ A., KOCAMAN S.

- OPTICAL MATERIALS, vol.73, pp.577-584, 2017 (Journal Indexed in SCI)  
**Generation recombination suppression via depletion engineered heterojunction for alternative substrate MWIR HgCdTe infrared photodetectors**  
Ozer Y., KOCAMAN S.
- JOURNAL OF APPLIED PHYSICS, vol.122, 2017 (Journal Indexed in SCI)  
**Comparison of coherently coupled multi-cavity and quantum dot embedded single cavity systems**  
KOCAMAN S., Sayan G.
- OPTICS EXPRESS, vol.24, pp.29330-29342, 2016 (Journal Indexed in SCI)  
**Near-infrared Hong-Ou-Mandel interference on a silicon quantum photonic chip**  
Xu X., Xie Z., Zheng J., Liang J., Zhong T., Yu M., Kocaman S., Lo G., Kwong D., Englund D. R. , et al.
- Optics Express, vol.21, pp.5014-5024, 2013 (Journal Indexed in SCI)  
**On-chip optical filters with designable characteristics based on an interferometer with embedded silicon photonic structures**  
Kocaman S., Aras M. S. , Panoiu N. C. , Lu M., Wong C. W.
- Optics Letters, vol.37, pp.665-667, 2012 (Journal Indexed in SCI)  
**Zero phase delay in negative-refractive-index photonic crystal superlattices**  
Kocaman S., Aras M., Hsieh P., McMillan J., Biris C., Panoiu N., Yu M., Kwong D., Stein A., Wong C.
- Nature Photonics, vol.5, pp.499-505, 2011 (Journal Indexed in SCI)  
**Deterministic integrated tuning of multicavity resonances and phase for slow-light in coupled photonic crystal cavities**  
Gu T., Kocaman S., Yang X., McMillan J., Yu M., Lo G., Kwong D., Wong C.
- Applied Physics Letters, vol.98, 2011 (Journal Indexed in SCI)  
**Observations of temporal group delays in slow-light multiple coupled photonic crystal cavities**  
Kocaman S., Yang X., McMillan J., Yu M., Kwong D., Wong C.
- Applied Physics Letters, vol.96, 2010 (Journal Indexed in SCI)  
**Observation of zeroth-order band gaps in negative-refraction photonic crystal superlattices at near-infrared frequencies**  
Kocaman S., Chatterjee R., Panoiu N., McMillan J., Yu M., Osgood R., Kwong D., Wong C.
- Physical Review Letters, vol.102, 2009 (Journal Indexed in SCI)

## Articles Published in Other Journals

- **Analysis of quantum-dot-embedded multicavity arrays for on-chip WDM applications**  
Erdinc H., Kocaman S.  
TURKISH JOURNAL OF PHYSICS, vol.42, pp.356-370, 2018 (Journal Indexed in ESCI)

## Refereed Congress / Symposium Publications in Proceedings

- **A Dual-Band HgCdTe nBn Infrared Detector Design**  
UZGUR F., KOCAMAN S.  
Conference on Infrared Sensors, Devices, and Applications IX as part of SPIE Optics + Photonics Conference, California, United States Of America, 14 - 15 August 2019, vol.11129
- **Integrated optical modulators with zero index metamaterials based on photonic crystal slab waveguides**  
Yildirim M., GÖVDELİ A., KOCAMAN S.  
Conference on Integrated Optics - Devices, Materials, and Technologies XXIII, San-Francisco, Costa Rica, 4 - 07 February 2019, vol.10921
- **On-chip deterministic optical SWAP gate**  
Bozkurt A. B. , KOCAMAN S.

Conference on Quantum Nanophotonic Materials, Devices, and Systems, California, United States Of America, 14 - 15 August 2019, vol.11091

● **Tuning of 2D Rod-Type Photonic Crystal Cavity for Optical Modulation and Impact Sensing**

Orsel O. E. , ERDİL M., Yanik C., KOCAMAN S.

Conference on MOEMS and Miniaturized Systems XVIII, San-Francisco, Costa Rica, 2 - 04 February 2019, vol.10931

● **Flexible waveguides with amorphous photonic materials**

Sarihan M. C. , Yilmaz Y. B. , ERDİL M., Aras M. S. , Yanik C., Wong C. W. , KOCAMAN S.

Conference on Optical Components and Materials XVI, San-Francisco, Costa Rica, 4 - 06 February 2019, vol.10914

● **Tunable integrated optical modulator with dynamical photonic band transition of photonic crystals**

GÖVDELİ A., KOCAMAN S.

Conference on Silicon Photonics XIV, San-Francisco, Costa Rica, 4 - 06 February 2019, vol.10923

● **Breaking the trade-off between Q-factor and sensitivity for high-Q slot mode photonic crystal nanobeam cavity biosensors with optomechanical feedback**

ERDİL M., KOCAMAN S.

Conference on Microfluidics, BioMEMS, and Medical Microsystems XVII, San-Francisco, Costa Rica, 2 - 04 February 2019, vol.10875

● **Optomechanical impact sensor with photonic crystal structures**

Orsel O. E. , ERDİL M., Yanik C., KOCAMAN S.

Active Photonic Platforms XI Conference 2019, California, United States Of America, 11 - 15 August 2019, vol.11081

● **Physical Stability Analysis for Optical MEMS Phase Shifters**

Ozer Y., KOCAMAN S.

31st Annual IEEE Photonics Conference (IPC) of the IEEE-Photonics-Society, Preston, United Kingdom, 30 September - 04 October 2018

● **Optomechanically Enhanced High-Q Slot Mode Photonic Crystal Nanobeam Cavity**

ERDİL M., KOCAMAN S.

31st Annual IEEE Photonics Conference (IPC) of the IEEE-Photonics-Society, Preston, United Kingdom, 30 September - 04 October 2018

● **Depletion Engineered Heterojunction p plus -n HgCdTe Infrared Photodetector Structures**

Livanelioglu C., Ozer Y., KOCAMAN S.

31st Annual IEEE Photonics Conference (IPC) of the IEEE-Photonics-Society, Preston, United Kingdom, 30 September - 04 October 2018

● **Band-to-Band Transition Based On-Chip Optical Modulator**

GÖVDELİ A., Sarihan M. C. , Karaca U., KOCAMAN S.

31st Annual IEEE Photonics Conference (IPC) of the IEEE-Photonics-Society, Preston, United Kingdom, 30 September - 04 October 2018

● **Hybrid Integration of Broadband Silicon Modulators and InGaAs Photodetectors**

Karaca U., GÖVDELİ A., KOCAMAN S.

31st Annual IEEE Photonics Conference (IPC) of the IEEE-Photonics-Society, Preston, United Kingdom, 30 September - 04 October 2018

● **Dynamical FDTD Method for Coupled Integrated Resonators**

Aslan A., KOCAMAN S.

31st Annual IEEE Photonics Conference (IPC) of the IEEE-Photonics-Society, Preston, United Kingdom, 30 September - 04 October 2018

● **Asymmetric Band Gaps in Amorphous Photonic Materials**

Sarihan M. C. , GÖVDELİ A., Aras M. S. , Yanik C., Wong C. W. , KOCAMAN S.

31st Annual IEEE Photonics Conference (IPC) of the IEEE-Photonics-Society, Preston, United Kingdom, 30 September - 04 October 2018

● **Comparative Study for Coupled High-Q Cavity Quantum Dot System**

Tugen A., KOCAMAN S.

30th Annual Conference of the IEEE-Photonics-Society (IPC), Florida, United States Of America, 1 - 05 October 2017, pp.273-274

- **A chip-scale single-photon SWAP gate as integrated interface between polarization and spatial-momentum qubits**  
Xie Z., Li Y., Xu X., Kumar A., Kocaman S., Zhong T., Veitia A., Yu M., Kwong D., Wong F. N. C. , et al.  
Conference on Lasers and Electro-Optics (CLEO), San-Jose, Costa Rica, 14 - 19 May 2017
- **A comparative design study for MWIR HgCdTe detectors**  
Ozer Y., KOCAMAN S.  
Conference on Infrared Technology and Applications XLIII, California, United States Of America, 9 - 13 April 2017, vol.10177
- **Al/Sb Free InGaAs Unipolar Barrier Infrared Detectors**  
UZGUR F., Karaca U., Kizilkan E., KOCAMAN S.  
Conference on Infrared Technology and Applications XLIII, California, United States Of America, 9 - 13 April 2017, vol.10177
- **Optimization of Mesa Structured InGaAs Based Photodiode Arrays**  
Dolas M. H. , ÇIRÇIR K., KOCAMAN S.  
Conference on Image Sensing Technologies - Materials, Devices, Systems, and Applications IV, California, United States Of America, 12 - 13 April 2017, vol.10209
- **Delay characteristics comparison of coherently coupled high-Q multi-cavity array and single embedded quantum dot cavity systems**  
KOCAMAN S., Sayan G. T.  
Conference on Quantum Dots and Nanostructures - Growth, Characterization, and Modeling XIV, San-Francisco, Costa Rica, 30 - 31 January 2017, vol.10114

## Supported Projects

- Kocaman S., TUBITAK Project, Genişletilmiş Swir Bölgesinde Çalışan Delta Katkılı Nbn Yapısında Kızılötesi Dedektör, 2019 - 2021
- Kocaman S., Project Supported by Defense Industry, KIZILÖTESİ DEDEKTÖR TAKIMI (KDT) GELİŞTİRİLMESİ (NAR) PROJESİ KAPSAMINDA ÇİFT RENKLİ MWIR/MWIR HgCdTe KIZILÖTESİ SENSÖR ÜRETİLMESİ PROJESİ, 2018 - 2021
- Kocaman S., TUBITAK Project, Yakın Kızılötesi Dalga Boyunda Bütünleşik Devre Üzeri Amorf Dalga Kılavuzu, 2018 - 2020
- Kocaman S., TUBITAK Project, Geniş Bant Aralığında Çalışabilen Çip Üzeri Optik Modülatör Ve Anahtarlama Aygıtları, 2017 - 2020
- Kocaman S., TUBITAK Project, Faz-Uyumlu (Düşük Faz Kaymalı) Tümlleşik Sayısal Zayıflatıcı Geliştirilmesi, 2015 - 2018
- KOCAMAN S., Project Supported by Higher Education Institutions, Elektromanyetik Olarak İndüklenmiş Geçirgenliğin Fotonik Kristal Dalga Kılavuzları ile Optik Benzerinin Optimizasyonu, 2016 - 2017
- KOCAMAN S., Project Supported by Other Private Institutions, KDKS Projesi İçin Yarı İletken Malzeme Büyütülmesi Çalışması, 2016 - 2016
- KOCAMAN S., Project Supported by Other Private Institutions, AFSS Projesi İçin Yarı İletken Malzeme Büyütülmesi Çalışması, 2015 - 2016
- Kocaman S., TUBITAK Project, Kuantum Noktalar ve Fotonik Kristaller Kullanılarak Geliştirilen Entegre Fotonik Sistemler, 2014 - 2016

## Citations

Total Citations (WOS):285

h-index (WOS):8

## Awards

Kocaman S., Mustafa Parlar Vakfı Arařtırma Teřvik Ödölü, Mustafa Parlar Eđitim Ve Arařtırma Vakfı, December 2019

Kocaman S., Nakibođlu B., Bilim Akademisi Genç Bilim İnsanları Ödöl Programı (BAGEP), Bilim Akademisi, April 2019