

## Dr.Öğr.Üyesi Fatih AKYOL

### Kişisel Bilgiler

İş Telefonu: [+90 212 383 4715](tel:+902123834715)

E-posta: [akyolf@yildiz.edu.tr](mailto:akyolf@yildiz.edu.tr)

Diğer E-posta: [akyol.4f@gmail.com](mailto:akyol.4f@gmail.com)

Web: <https://avesis.yildiz.edu.tr/akyolf>

Posta Adresi: Kimya-Metalürji Fakültesi, Metalürji ve Malzeme Mühendisliği Bölümü KMA 205 34210 Esenler / İstanbul

### Eğitim Bilgileri

Post Doktora, Ohio State University, Electrical And Computer Engineering, Amerika Birleşik Devletleri 2016 - 2017

Doktora, Ohio State University, Electrical And Computer Engineering, Amerika Birleşik Devletleri 2011 - 2016

Yüksek Lisans, Ohio State University, Electrical And Computer Engineering, Amerika Birleşik Devletleri 2009 - 2011

Lisans, Gaziantep Üniversitesi, Elektrik - Elektronik Muh., Türkiye 2003 - 2008

### Yabancı Diller

Almanca, A1 Başlangıç

İngilizce, C1 İleri

### Yaptığı Tezler

Doktora, Nanoscale Electron Transport Engineering for GaN Optoelectronic Devices, Ohio State University, Electrical And Computer Engineering, Faculty Of Engineering, 2016

Yüksek Lisans, N-Polar III-Nitride Optoelectronic Devices, Ohio State University, Electrical And Computer Engineering, Faculty Of Engineering, 2011

### Araştırma Alanları

Elektrik-Elektronik Mühendisliği, Optoelektronik Malzeme ve Aygıtlar , Yarı İletken Malzeme ve Aygıtlar , Nanomalzemeler, Mühendislik ve Teknoloji

### Akademik Unvanlar / Görevler

Dr.Öğr.Üyesi, Yıldız Teknik Üniversitesi, Kimya-Metalürji Fakültesi, Met.Ve Malzeme Müh.Böl., 2018 - Devam Ediyor

### SCI, SSCI ve AHCI İndekslerine Giren Dergilerde Yayınlanan Makaleler

1. **Simulation of beta-Ga<sub>2</sub>O<sub>3</sub> vertical Schottky diode based photodetectors revealing average hole mobility of 20cm<sup>2</sup>V<sup>(-1)</sup>s<sup>(-1)</sup>**  
AKYOL F.  
JOURNAL OF APPLIED PHYSICS, cilt.127, sa.7, 2020 (SCI İndekslerine Giren Dergi)

- II. **Tunnel-injected sub 290 nm ultra-violet light emitting diodes with 2.8% external quantum efficiency**  
Zhang Y., Jamal-Eddine Z., Akyol F., Bajaj S., Johnson J. M., Calderon G., ALLERMAN A. A., MOSELEY M. W., ARMSTRONG A. M., Hwang J., et al.  
APPLIED PHYSICS LETTERS, cilt.112, sa.7, 2018 (SCI İndekslerine Giren Dergi)
- III. **High Al-Content AlGa<sub>N</sub> Transistor With 0.5 A/mm Current Density and Lateral Breakdown Field Exceeding 3.6 MV/cm**  
Bajaj S., ALLERMAN A., ARMSTRONG A., Razzak T., Talesara V., Sun W., Soheli S. H., Zhang Y., Lu W., Arehart A. R., et al.  
IEEE ELECTRON DEVICE LETTERS, cilt.39, sa.2, ss.256-259, 2018 (SCI İndekslerine Giren Dergi)
- IV. **Ultralow-voltage-drop GaN/InGa<sub>N</sub>/Ga<sub>N</sub> tunnel junctions with 12% indium content**  
Akyol F., Zhang Y., Krishnamoorthy S., Rajan S.  
APPLIED PHYSICS EXPRESS, cilt.10, sa.12, 2017 (SCI İndekslerine Giren Dergi)
- V. **Graded AlGa<sub>N</sub> Channel Transistors for Improved Current and Power Gain Linearity**  
Bajaj S., Yang Z., Akyol F., PARK P. S., Zhang Y., Price A. L., Krishnamoorthy S., MEYER D. J., Rajan S.  
IEEE TRANSACTIONS ON ELECTRON DEVICES, cilt.64, sa.8, ss.3114-3119, 2017 (SCI İndekslerine Giren Dergi)
- VI. **Reflective metal/semiconductor tunnel junctions for hole injection in AlGa<sub>N</sub> UV LEDs**  
Zhang Y., Krishnamoorthy S., Akyol F., Johnson J. M., ALLERMAN A. A., MOSELEY M. W., ARMSTRONG A. M., Hwang J., Rajan S.  
APPLIED PHYSICS LETTERS, cilt.111, sa.5, 2017 (SCI İndekslerine Giren Dergi)
- VII. **Tunnel-injected sub-260nm ultraviolet light emitting diodes**  
Zhang Y., Krishnamoorthy S., Akyol F., Bajaj S., ALLERMAN A. A., MOSELEY M. W., ARMSTRONG A. M., Rajan S.  
APPLIED PHYSICS LETTERS, cilt.110, sa.20, 2017 (SCI İndekslerine Giren Dergi)
- VIII. **Design of p-type cladding layers for tunnel-injected UV-A light emitting diodes**  
Zhang Y., Krishnamoorthy S., Akyol F., ALLERMAN A. A., MOSELEY M. W., ARMSTRONG A. M., Rajan S.  
APPLIED PHYSICS LETTERS, cilt.109, sa.19, 2016 (SCI İndekslerine Giren Dergi)
- IX. **AlGa<sub>N</sub> channel field effect transistors with graded heterostructure ohmic contacts**  
Bajaj S., Akyol F., Krishnamoorthy S., Zhang Y., Rajan S.  
APPLIED PHYSICS LETTERS, cilt.109, sa.13, 2016 (SCI İndekslerine Giren Dergi)
- X. **Design and demonstration of ultra-wide bandgap AlGa<sub>N</sub> tunnel junctions**  
Zhang Y., Krishnamoorthy S., Akyol F., ALLERMAN A. A., MOSELEY M. W., ARMSTRONG A. M., Rajan S.  
APPLIED PHYSICS LETTERS, cilt.109, sa.12, 2016 (SCI İndekslerine Giren Dergi)
- XI. **Enhanced light extraction in tunnel junction-enabled top emitting UV LEDs**  
Zhang Y., ALLERMAN A. A., Krishnamoorthy S., Akyol F., MOSELEY M. W., ARMSTRONG A. M., Rajan S.  
APPLIED PHYSICS EXPRESS, cilt.9, sa.5, 2016 (SCI İndekslerine Giren Dergi)
- XII. **Low-resistance Ga<sub>N</sub> tunnel homojunctions with 150 kA/cm<sup>2</sup> current and repeatable negative differential resistance**  
Akyol F., Krishnamoorthy S., Zhang Y., Johnson J., Hwang J., Rajan S.  
APPLIED PHYSICS LETTERS, cilt.108, sa.13, 2016 (SCI İndekslerine Giren Dergi)
- XIII. **Density-dependent electron transport and precise modeling of Ga<sub>N</sub> high electron mobility transistors**  
Bajaj S., Shoron O. F., Park P. S., Krishnamoorthy S., Akyol F., Hung T., REZA S., CHUMBES E. M., Khurgin J., Rajan S.  
APPLIED PHYSICS LETTERS, cilt.107, sa.15, 2015 (SCI İndekslerine Giren Dergi)
- XIV. **GaN-based three-junction cascaded light-emitting diode with low-resistance InGa<sub>N</sub> tunnel junctions**  
Akyol F., Krishnamoorthy S., Zhang Y., Rajan S.  
APPLIED PHYSICS EXPRESS, cilt.8, sa.8, 2015 (SCI İndekslerine Giren Dergi)
- XV. **Interband tunneling for hole injection in III-nitride ultraviolet emitters**  
Zhang Y., Krishnamoorthy S., Johnson J. M., Akyol F., ALLERMAN A., MOSELEY M. W., ARMSTRONG A., Hwang J., Rajan S.  
APPLIED PHYSICS LETTERS, cilt.106, sa.14, 2015 (SCI İndekslerine Giren Dergi)
- XVI. **InGa<sub>N</sub>/Ga<sub>N</sub> tunnel junctions for hole injection in Ga<sub>N</sub> light emitting diodes**  
Krishnamoorthy S., Akyol F., Rajan S.

- APPLIED PHYSICS LETTERS, cilt.105, sa.14, 2014 (SCI İndekslerine Giren Dergi)
- XVII. **Tunneling-based carrier regeneration in cascaded GaN light emitting diodes to overcome efficiency droop**  
Akyol F., Krishnamoorthy S., Rajan S.  
APPLIED PHYSICS LETTERS, cilt.103, sa.8, 2013 (SCI İndekslerine Giren Dergi)
- XVIII. **Low resistance GaN/InGaN/GaN tunnel junctions**  
Krishnamoorthy S., Akyol F., Park P. S. , Rajan S.  
APPLIED PHYSICS LETTERS, cilt.102, sa.11, 2013 (SCI İndekslerine Giren Dergi)
- XIX. **Polarization-engineered GaN/InGaN/GaN tunnel diodes**  
Krishnamoorthy S., Nath D. N. , Akyol F., Park P. S. , Esposito M., Rajan S.  
APPLIED PHYSICS LETTERS, cilt.97, sa.20, 2010 (SCI İndekslerine Giren Dergi)

## **Diğer Dergilerde Yayınlanan Makaleler**

- I. **Investigating the effect of self-trapped holes in the current gain mechanism of beta-Ga<sub>2</sub>O<sub>3</sub> Schottky diode photodetectors**  
AKYOL F.  
TURKISH JOURNAL OF PHYSICS, cilt.45, sa.3, ss.169-177, 2021 (ESCI İndekslerine Giren Dergi)

## **Kitap & Kitap Bölümleri**

- I. **Gallium Nitride–Based Interband Tunnel Junctions**  
AKYOL F.  
Gallium Nitride (GaN) Physics, Devices, and Technology, Farid Medjdoub, Editör, Crc Press, Florida, Boca Raton, ss.299-326, 2017

## **Hakemli Kongre / Sempozyum Bildiri Kitaplarında Yer Alan Yayınlar**

- I. **Growth of single crystal Ga<sub>2</sub>O<sub>3</sub> by customized low pressure chemical deposition**  
AKYOL F.  
Global conference on Material Sciences, İstanbul, Türkiye, 30 Ekim - 01 Kasım 2020
- II. **Tunnel-injected ultraviolet light-emitting diodes (Conference Presentation)**  
RAJAN S., ZHANG Y., JAMAL EDDİE Z., AKYOL F., HWANG J., JOHNSON J.  
Gallium Nitride Materials and Devices XIII, San Francisco, United States, Amerika Birleşik Devletleri, 27 Ocak - 01 Şubat 2018, cilt.10532
- III. **Small-Signal Characteristics of Graded AlGa<sub>n</sub> Channel PoLFETs**  
BAJAJ S., YANG Z., AKYOL F., PARK P. S. , ZHANG Y., SOHEL S. H. , KRISHNAMOORTHY S., MEYER D. J. , RAJAN S.  
2017 75TH ANNUAL DEVICE RESEARCH CONFERENCE (DRC), South Bend, 25 - 28 Haziran 2017
- IV. **Ultra-Wide Bandgap AlGa<sub>n</sub> Channel MISFET with Polarization Engineered Ohmics**  
BAJAJ S., AKYOL F., KRISHNAMOORTHY S., ZHANG Y., ARMSTRONG A., ALTERMAN A., RAJAN S.  
2016 74TH ANNUAL DEVICE RESEARCH CONFERENCE (DRC), Newark, 19 - 22 Haziran 2016
- V. **Sub 300 nm Wavelength III-Nitride Tunnel-Injected Ultraviolet LEDs**  
ZHANG Y., KRISHNAMOORTHY S., AKYOL F., KHANDAKER S., ALLERMAN A., MOSELEY M. W. , ARMSTRONG A., RAJAN S.  
2015 73RD ANNUAL DEVICE RESEARCH CONFERENCE (DRC), Columbus, 21 - 24 Haziran 2015, ss.69-70
- VI. **Density-Dependent Electron Transport for Accurate Modeling of AlGa<sub>n</sub>/Ga<sub>n</sub> HEMTs**  
BAJAJ S., SHORON O. F. , PARK P. S. , KRISHNAMOORTHY S., AKYOL F., HUNG T. H. , REZA S., CHUMBES E. M. , KHURGİN J. B. , RAJAN S.

2015 73RD ANNUAL DEVICE RESEARCH CONFERENCE (DRC), Columbus, 21 - 24 Haziran 2015, ss.33-34

**VII. Power Switching Transistors Based on GaN and AlGaN Channels**

Bajaj S., Hung T., Akyol F., Krishnamoorthy S., Khandaker S., ARMSTRONG A., ALLERMAN A., Rajan S.

3rd IEEE Workshop on Wide Bandgap Power Devices and Applications (WiPDA), Virginia, Amerika Birleşik Devletleri, 2 - 04 Kasım 2015, ss.16-20

**VIII. III-nitride tunnel junctions for efficient solid state lighting**

Krishnamoorthy S., Akyol F., Rajan S.

Conference on Gallium Nitride Materials and Devices IX, San-Francisco, Kostarika, 3 - 06 Şubat 2014, cilt.8986

## **Desteklenen Projeler**

Akyol F., Demir I., TÜBİTAK - AB COST Projesi , European Network for Innovative and Advanced Epitaxy, 2021 - 2026

Akyol F., TÜBİTAK Projesi, Monoklinik Galyum Oksit ( $\beta$ -Ga<sub>2</sub>O<sub>3</sub>) Tabakalarının 4h- Silisyum Karbür (SiC) Üzerine Epitaksiyel Elde Edilmesi, 2021 - 2022

Akyol F., TÜBİTAK Projesi, Low Pressure Chemical Vapor Deposition of Ga<sub>2</sub>O<sub>3</sub>, 2019 - 2022

## **Patent**

Akyol F., TUNNEL JUNCTION ULTRAVIOLET LIGHT EMITTING DIODES WITH ENHANCED LIGHT EXTRACTION EFFICIENCY, Patent, BÖLÜM H Elektrik, Buluşun Tescil No: WO 2018/204402 A1 , İlk Tescil, 2018

## **Atıflar**

Toplam Atıf Sayısı (WOS):609

h-indeksi (WOS):16