

## Prof. Ömer DÖNMEZ



### Personal Information

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### International Researcher IDs

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**Publons / Web Of Science ResearcherID:** K-9802-2013  
**ScopusID:** 37107472000  
**Yoksis Researcher ID:** 150431

### Education Information

Doctorate, Istanbul University, Institute of Graduate Studies In Sciences, Katihal Fiziği Programı, Turkey 2009 - 2013  
Postgraduate, Istanbul University, Institute of Graduate Studies In Sciences, Katihal Fiziği Programı, Turkey 2006 - 2009  
Undergraduate, Istanbul University, Faculty Of Science, Fizik, Turkey 2000 - 2004

### Foreign Languages

English, B2 Upper Intermediate

### Certificates, Courses and Trainings

Personal Evolution, Trusted Reviewer, Institute of Physics, 2023  
Measurement and Evaluation, Outstanding Reviewer Awards:Nano Express, IOP Publishing:Nano Express, 2023  
Entrepreneurship, Outstanding Reviewer Awards: Journal of Physics D, IOP Publishing: Journal of Physics D, 2023  
Innovative Product Design, New Frontiers in Optical Technology, Tampere University of Technology, 2011  
Vocational Training, Theoretical Techniques in Semiconductor Research, Dokuz Eylül University, 2011  
Vocational Training, Material and Physical Characterisation, Institute of Physics Wroclaw University of Technology, 2010  
Innovative Product Design, Güneş Gözelerinin Fiziği ve Teknolojisi, Sivas Cumhuriyet Üniversitesi, 2010  
Innovative Product Design, Training school on Nitride Semiconductor Metaterials, University of Patras, 2009  
Vocational Training, Gravitasyon ve String/M teori, TÜBİTAK/Feza Gürsey Enstitüsü, 2004  
Vocational Training, Gravitasyon ve Kozmoloji, TÜBİTAK/Feza Gürsey Enstitüsü, 2002

### Dissertations

Doctorate, Investigation of low dimensional semiconductor structure with modulation spectroscopy, Istanbul University, Institute of Graduate Studies In Sciences, Fen Fakültesi Bölümü, 2013

Postgraduate, Investigation of quantum well structure with modulation spectroscopy, Istanbul University, Institute of Graduate Studies In Sciences, Fen Fakültesi Bölümü, 2009

Competence In Art, Einstein Gravitasyon Alan Denklemlerinin Reissner-Nordstrom Çözümü, Istanbul University, Faculty of Science, Matematiksel Fizik Anabilim Dalı, 2004

## Research Areas

Intensive Article 2: Electronic Structure, Electric, Magnetic and Optical Properties, Electrical properties of electronic structures, interfaces, thin films and low-dimensional structures, Magnetic Properties and Materials, Optical Properties, Spectroscopy of Matter, Electronic transport in condensed matter

## Academic and Administrative Experience

Fen Fakültesi Mal Alımları ve Kabul Komisyonu, Istanbul University, Faculty Of Science, 2016 - Continues  
Ders Kurulu Başkanı, Istanbul University, Institute of Graduate Studies In Sciences, 2018 - 2019

## Courses

Semiconductor Devices, Doctorate, 2021 - 2022  
Physics II, Undergraduate, 2021 - 2022  
Physics I, Undergraduate, 2020 - 2021  
Katıların Optik Özellikleri, Postgraduate, 2017 - 2018, 2016 - 2017  
Yarıiletkenler Fiziği II, Postgraduate, 2017 - 2018  
General Physics, Undergraduate, 2018 - 2019  
Kathal Fiziği, Undergraduate, 2018 - 2019  
Yarıiletkenler Fiziği, Undergraduate, 2017 - 2018, 2016 - 2017  
İleri Fizik Uygulamaları, Undergraduate, 2016 - 2017  
Kathal Fiziği, Undergraduate, 2017 - 2018  
Yarıiletkenler Fiziği I, Postgraduate, 2017 - 2018, 2016 - 2017  
Yarıiletkenler Fiziği II, Postgraduate, 2016 - 2017  
İleri Fizik Uygulamaları, Undergraduate, 2015 - 2016  
Yarıiletkenler Fiziği, Undergraduate, 2015 - 2016  
Optoelektronik, Undergraduate, 2016 - 2017  
Optoelektronik, Undergraduate, 2015 - 2016  
Yarıiletkenler Fiziği, Undergraduate, 2014 - 2015  
Optoelektronik, Undergraduate, 2014 - 2015

## Advising Theses

Dönmez Ö., Örgü uyumsuz alaşımlarda optik süreçlerin incelenmesi, Postgraduate, İ.Özcan(Student), Continues  
Dönmez Ö., Geniş Bant Aralıklı Yarıiletkenlerde Elektriksel Kontak Oluşum Mekanizmaları, Postgraduate, S.Nur(Student), Continues  
Dönmez Ö., Geniş bant aralıklı yarıiletkenlerde transport olaylarının incelenmesi, Doctorate, S.Amanova(Student), Continues  
Dönmez Ö., Bizmut içeren III-V grubu yarıiletkenlerde elektronik transport mekanizmalarının incelenmesi, Doctorate, M.Aydın(Student), 2023  
Dönmez Ö., Düşük boyutlu ferromanyetik alaşımların optoelektronik özelliklerinin kristal yönelimlerine bağlı olarak incelenmesi, Postgraduate, S.KERIMOVA(Student), 2021

## Jury Memberships

Doctorate, Doctorate, İstanbul Üniversitesi, June, 2021

Doctoral Examination, Doctoral Examination, İstanbul Üniversitesi, January, 2020

Doctoral Examination, Doctoral Examination, İstanbul Üniversitesi, December, 2019

Post Graduate, Post Graduate, İstanbul Üniversitesi, May, 2019

PhD Thesis Monitoring Committee Member, PhD Thesis Monitoring Committee Member, İstanbul Üniversitesi, March, 2019

PhD Thesis Monitoring Committee Member, PhD Thesis Monitoring Committee Member, İstanbul Üniversitesi, July, 2017

Post Graduate, Yüksek Lisans, Tez Savunma Juri Üyesi, İstanbul Üniversitesi, Fen Bilimleri Enstitüsü, June, 2016

## Designed Lessons

Dönmez Ö., Nano Yapılarda Transport-II: Gerçek düşük boyutlu yapılar, Doctorate, 2023 - 2024

Dönmez Ö., Yarıiletken Aygıtlar, Doctorate, 2023 - 2024

Dönmez Ö., Nano Yapılarda Transport-1: Sanki/Yapay düşük boyutlu Yapılar, Doctorate, 2023 - 2024

Dönmez Ö., Optical Properties of Solids-II, Doctorate, 2022 - 2023

Dönmez Ö., Optical Properties of Solids-I, Doctorate, 2022 - 2023

Dönmez Ö., Yarıiletken tabanlı biyosensörler, Postgraduate, 2019 - 2020

## Research Infrastructure Information

Erol A., Kuruoğlu F., Sarcan F., Dönmez Ö., Mutlu S., Advance Lithography Laboratories, June 2015

Erol A., Dönmez Ö., Sarcan F., Kuruoğlu F., Nano and Optoelectronics Research Laboratory, March 2001

## Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Electron energy relaxation mechanism in n-type  $\text{In}_x\text{Ga}_{1-x}\text{As}_1\text{-yBi}_y$  alloys under electric and magnetic fields**  
Aydin M., Yilmaz S. N., Erol A., Bork J., Zide J., Donmez Ö.  
PHYSICA SCRIPTA, vol.99, pp.105909, 2024 (SCI-Expanded)
- II. **Electric field dependence of the electron drift velocity in n-type  $\text{In}_x\text{Ga}_{1-x}\text{As}_1\text{-yBi}_y$  epilayer**  
AYDIN M., BORK J., ZIDE J., EROL A., DÖNMEZ Ö.  
Physica B: Condensed Matter, vol.685, 2024 (SCI-Expanded)
- III. **Effect of doping on transport properties of InSb epilayers grown by MOCVD and MBE**  
Gunes M., Aydın M., Dönmez Ö., Gümüş C., Erol A., Marroquin J., Felix J., Yoshikawa A., Geka H., Kuze N., et al.  
Materials Science and Engineering: B, vol.305, 2024 (SCI-Expanded)
- IV. **Characterization of induced quasi-two-dimensional transport in n-type  $\text{In}_x\text{Ga}_{1-x}\text{As}_1\text{-yBi}_y$  bulk layer**  
AYDIN M., YILMAZ S. N., BORK J., ZIDE J., EROL A., DÖNMEZ Ö.  
Applied Physics A: Materials Science and Processing, vol.130, no.7, 2024 (SCI-Expanded)
- V. **Determination of electronic band structure of quaternary ferromagnetic  $\text{Ga}_{0.97}\text{-yMn}_{0.03}\text{CryAs}$  epitaxial layers**  
Dönmez Ö., Gunes M., Henini M., Erol A.  
PHYSICA B-CONDENSED MATTER, vol.665, 2023 (SCI-Expanded)
- VI. **Analysis of mixed optical transitions in dilute magnetic AlAs/GaAs/ GaMnAs quantum wells grown on high substrate index by molecular beam epitaxy**  
Kerimova S., Dönmez Ö., Gunes M., Kuruoğlu F., Aydın M., Gümüş C., Erol A.

- VII. **Comprehensively analysis of hot electron transport in as-grown and thermally annealed n-type modulation-doped  $\text{Al}_{0.15}\text{Ga}_{0.85}\text{As}/\text{GaAs}_{0.96}\text{Bi}_{0.4}$  quantum well structure**  
Dönmez Ö., Aydın M., Mutlu S., Puustinen J., Hilska J., Guina M., Erol A.  
Materials Science in Semiconductor Processing, vol.154, 2023 (SCI-Expanded)
- VIII. **High-Field Electron-Drift Velocity in n-Type Modulation-Doped  $\text{GaAs}_{0.96}\text{Bi}_{0.04}$  Quantum Well Structure**  
Aydın M., Mutlu S., Erol A., Puustinen J., Hilska J., Guina M., Dönmez Ö.  
PHYSICA STATUS SOLIDI-RAPID RESEARCH LETTERS, vol.16, no.11, 2022 (SCI-Expanded)
- IX. **A quantitative analysis of electronic transport in n- and p-type modulation-doped GaAsBi/AlGaAs quantum well structures**  
Dönmez Ö., Erol A., Çetinkaya Ç., Cokduygulular E., Aydın M., Yıldırım S., Puustinen J., Hilska J., Guina M.  
SEMICONDUCTOR SCIENCE AND TECHNOLOGY, vol.36, no.11, 2021 (SCI-Expanded)
- X. **Temperature-dependent sandwich and in-plane optical characterization of ternary chalcogenide  $\text{TlSbS}_2$**   
Sarcan F., Aydın M., Kuruoğlu F., Dönmez Ö., Yıldırım S., Erol A.  
Materials Science and Engineering B: Solid-State Materials for Advanced Technology, vol.272, 2021 (SCI-Expanded)
- XI. **Photoluminescence characteristic of as-grown and thermally annealed n-and p-type modulation-doped  $\text{Ga}_{(0.68)}\text{In}_{(0.32)}\text{N}_{(x)}\text{As}_{(1-x)}/\text{GaAs}$  quantum well structures**  
Donmez O., Sarcan F., Erol A., Urgan F., Sari H.  
THIN SOLID FILMS, vol.732, 2021 (SCI-Expanded)
- XII. **Determination of the acoustic phonon-hot carriers interaction in n- and p-type modulation-doped GaInNAs/GaAs quantum wells**  
Dönmez Ö., Sarcan F., Erol A.  
Physica B: Condensed Matter, vol.612, 2021 (SCI-Expanded)
- XIII. **The effect of strain and spatial Bi distribution on the band alignment of GaAsBi single quantum well structure**  
Gunes M., Dönmez Ö., Gumus C., Erol A., Alghamdi H., Alhassan S., Alhassni A., Alotaibi S., Schmidbauer M., Galeti H. V. A., et al.  
PHYSICA B-CONDENSED MATTER, vol.602, 2021 (SCI-Expanded)
- XIV. **Power loss mechanisms in n-type modulation-doped AlGaAs/GaAsBi quantum well heterostructures**  
Dönmez Ö., Aydın M., Ardali S., Yildirim S., Tiras E., Erol A., Puustinen J., Hilska J., Guina M.  
SEMICONDUCTOR SCIENCE AND TECHNOLOGY, vol.35, 2020 (SCI-Expanded)
- XV. **Electronic transport in n-type modulation-doped AlGaAs/GaAsBi quantum well structures: influence of Bi and thermal annealing on electron effective mass and electron mobility**  
Donmez Ö., Aydın M., Ardali S., Yildirim S., Tiras E., Nutku F., Cetinkaya Ç., Cokduygulular E., Puustinen J., Hilska J., et al.  
SEMICONDUCTOR SCIENCE AND TECHNOLOGY, vol.35, no.2, 2020 (SCI-Expanded)
- XVI. **Effects of Thermal Annealing and Selective Chemical Etching on Structural and Optical Properties of GaAsBi Epilayer with Droplet Systems**  
Erucar T., Kara K., Donmez Ö., Erol A., Arnoult A., Fontaine C.  
JOURNAL OF NANOSCIENCE AND NANOTECHNOLOGY, vol.19, no.12, pp.7846-7852, 2019 (SCI-Expanded)
- XVII. **Characterization of a GaAs/GaAsBi pin solar cell**  
Muhammetgulyyev A., Erbas Ö. G., Kinaci B., Donmez Ö., Celebi Y. G., Erol A.  
SEMICONDUCTOR SCIENCE AND TECHNOLOGY, vol.34, no.8, 2019 (SCI-Expanded)
- XVIII. **Optical properties of  $\text{GaAs}_{1-x}\text{Bi}_x/\text{GaAs}$  quantum well structures grown by molecular beam epitaxy on (100) and (311)B GaAs substrates**  
Gunes M., Ukelge M. O., Donmez Ö., Erol A., Gumus C., Alghamdi H., Galeti H. V. A., Henini M., Schmidbauer M., Hilska J., et al.

- SEMICONDUCTOR SCIENCE AND TECHNOLOGY, vol.33, no.12, 2018 (SCI-Expanded)
- XIX. **A study of electric transport in n- and p-type modulation-doped GaInNAs/GaAs quantum well structures under a high electric field**  
Sarcan F., Mutlu S., Cokduygular E., Donmez Ö., Erol A., Puustinen J., Guina M.  
SEMICONDUCTOR SCIENCE AND TECHNOLOGY, vol.33, no.6, 2018 (SCI-Expanded)
- XX. **Optical properties of n- and p-type modulation doped GaAsBi/AlGaAs quantum well structures**  
Cetinkaya C., Cokduygular E., Nutku F., Donmez Ö., Puustinen J., Hilska J., Erol A., Guina M.  
JOURNAL OF ALLOYS AND COMPOUNDS, vol.739, pp.987-996, 2018 (SCI-Expanded)
- XXI. **Characterization of emitted light from travelling Gunn domains in Al<sub>0.08</sub>Ga<sub>0.92</sub>As alloy based Gunn devices**  
Cetinkaya C., Mutlu S., Donmez Ö., Erol A.  
SUPERLATTICES AND MICROSTRUCTURES, vol.111, pp.744-753, 2017 (SCI-Expanded)
- XXII. **Effect of thermal annealing and nitrogen composition on quantum transport in GaInNAs alloy based modulation doped quantum well structures**  
Nutku F., Donmez Ö., Cokduygular E., Sarcan F., Kuruoglu F., Mutlu S., Yildirim S., Erol A.  
JOURNAL OF ALLOYS AND COMPOUNDS, vol.695, pp.404-409, 2017 (SCI-Expanded)
- XXIII. **Thermal annealing effects on optical and structural properties of GaBiAs epilayers: Origin of the thermal annealing-induced redshift in GaBiAs**  
Donmez Ö., Kara K., Erol A., Akalin E., Makhloufi H., Arnoult A., Fontaine C.  
JOURNAL OF ALLOYS AND COMPOUNDS, vol.686, pp.976-981, 2016 (SCI-Expanded)
- XXIV. **Optical properties of GaBiAs single quantum well structures grown by MBE**  
Donmez Ö., Erol A., Arikani M. C., Makhloufi H., Arnoult A., Fontaine C.  
SEMICONDUCTOR SCIENCE AND TECHNOLOGY, vol.30, no.9, 2015 (SCI-Expanded)
- XXV. **Quantum oscillations and interference effects in strained n- and p-type modulation doped GaInNAs/GaAs quantum wells**  
Sarcan F., Nutku F., Donmez Ö., Kuruoglu F., Mutlu S., Erol A., Yildirim S., Arikani M. C.  
JOURNAL OF PHYSICS D-APPLIED PHYSICS, vol.48, no.30, 2015 (SCI-Expanded)
- XXVI. **Negative and positive magnetoresistance in GaInNAs/GaAs modulation-doped quantum well structures**  
Nutku F., Donmez Ö., Sarcan F., Erol A., Puustinen J., Arikani M. C., Guina M.  
APPLIED PHYSICS A-MATERIALS SCIENCE & PROCESSING, vol.118, no.3, pp.823-829, 2015 (SCI-Expanded)
- XXVII. **Analytic modeling of temperature dependence of 2D carrier mobility in as-grown and annealed GaInNAs/GaAs quantum well structures**  
Donmez Ö., Sarcan F., Lisesivdin S. B., Vaughan M. P., Erol A., Gunes M., Arikani M. C., Puustinen J., Guina M.  
SEMICONDUCTOR SCIENCE AND TECHNOLOGY, vol.29, no.12, 2014 (SCI-Expanded)
- XXVIII. **Anisotropic electron g factor as a probe of the electronic structure of GaBixAs<sub>1-x</sub>/GaAs epilayers**  
Broderick C. A., Mazzucato S., Carrere H., Amand T., Makhloufi H., Arnoult A., Fontaine C., Donmez Ö., Erol A., Usman M., et al.  
PHYSICAL REVIEW B, vol.90, no.19, 2014 (SCI-Expanded)
- XXIX. **Bismuth-induced effects on optical, lattice vibrational, and structural properties of bulk GaAsBi alloys**  
Sarcan F., Donmez Ö., Kara K., Erol A., Akalin E., Arikani M. C., Makhloufi H., Arnoult A., Fontaine C.  
NANOSCALE RESEARCH LETTERS, vol.9, 2014 (SCI-Expanded)
- XXX. **Magnetotransport study on as-grown and annealed n- and p-type modulation-doped GaInNAs/GaAs strained quantum well structures**  
Donmez Ö., Sarcan F., Erol A., Gunes M., Arikani M. C., Puustinen J., Guina M.  
NANOSCALE RESEARCH LETTERS, vol.9, 2014 (SCI-Expanded)
- XXXI. **Influence of nitrogen on hole effective mass and hole mobility in p-type modulation doped GaInNAs/GaAs quantum well structures**  
Sarcan F., Donmez Ö., Erol A., Gunes M., Arikani M. C., Puustinen J., Guina M.  
APPLIED PHYSICS LETTERS, vol.103, no.8, 2013 (SCI-Expanded)

- XXXII. **A study of photomodulated reflectance on staircase-like, n-doped GaAs/Al (x) Ga<sub>1-x</sub>As quantum well structures**  
Donmez Ö., Nutku F., Erol A., Arikan C. M., Ergun Y.  
NANOSCALE RESEARCH LETTERS, vol.7, 2012 (SCI-Expanded)
- XXXIII. **Excitation energy-dependent nature of Raman scattering spectrum in GaInNAs/GaAs quantum well structures**  
Erol A., Akalin E., Sarcan F., Donmez Ö., Akyuz S., Arikan C. M., Puustinen J., Guina M.  
NANOSCALE RESEARCH LETTERS, vol.7, 2012 (SCI-Expanded)
- XXXIV. **An analysis of Hall mobility in as-grown and annealed n- and p-type modulation-doped GaInNAs/GaAs quantum wells**  
Sarcan F., Donmez Ö., Gunes M., Erol A., Arikan M. C., Puustinen J., Guina M.  
NANOSCALE RESEARCH LETTERS, vol.7, 2012 (SCI-Expanded)
- XXXV. **The role of dislocation-induced scattering in electronic transport in Ga<sub>x</sub>In<sub>1-x</sub>N alloys**  
Donmez Ö., Gunes M., Erol A., Arikan C. M., Balkan N., Schaff W. J.  
NANOSCALE RESEARCH LETTERS, vol.7, 2012 (SCI-Expanded)
- XXXVI. **High carrier concentration induced effects on the bowing parameter and the temperature dependence of the band gap of Ga<sub>x</sub>In<sub>1-x</sub>N**  
Donmez Ö., Gunes M., Erol A., Arikan M. C., Balkan N.  
JOURNAL OF APPLIED PHYSICS, vol.110, no.10, 2011 (SCI-Expanded)
- XXXVII. **Influence of high electron concentration on band gap and effective electron mass of InN**  
Donmez Ö., YILMAZ M., Erol A., ULUĞ B., Arikan M. C., Ulug A., Ajagunna A. O., Iliopoulos E., Georgakilas A.  
PHYSICA STATUS SOLIDI B-BASIC SOLID STATE PHYSICS, vol.248, no.5, pp.1172-1175, 2011 (SCI-Expanded)

## Articles Published in Other Journals

- I. **Effect of Annealing on Electronic Transport in Modulation-doped In<sub>0.32</sub>Ga<sub>0.68</sub>As/GaAs Quantum Well Structures**  
Rajhi A., Aydın M., Dönmez Ö., Sarcan F., Erol A.  
Physics and Astronomy Reports, vol.2, no.1, pp.29-36, 2024 (Peer-Reviewed Journal)
- II. **Optical characterization of Ga<sub>0.965</sub>Mn<sub>0.03</sub>Cr<sub>0.005</sub>As thin film grown by molecular beam epitaxy**  
Dönmez Ö., Güneş M., Erol A.  
Artubilm: Adana Alparslan Türkeş Bilim ve Teknoloji Üniversitesi Fen Bilimleri Dergisi, vol.4, no.2, pp.44-49, 2021 (Peer-Reviewed Journal)
- III. **Investigating above-bandgap and below-bandgap optical transition in GaBiAs epilayers by photoreflectance spectroscopy**  
DÖNMEZ Ö., EROL A.  
TURKISH JOURNAL OF PHYSICS, vol.44, no.4, pp.384-393, 2020 (ESCI)

## Refereed Congress / Symposium Publications in Proceedings

- I. **Anomalous Temperature-Dependent Carrier Dynamics and Magnetotransport Properties of InSb Grown by MBE and MOCVD**  
AYDIN M., GÜNEŞ M., DÖNMEZ Ö., Henini M., EROL A.  
18th International Nanoscience and Nanotechnology Conference, İstanbul, Turkey, 26 - 28 August 2024
- II. **Formation of quasi-two-dimensional electron transport in bulk InGaAsBi layer**  
AYDIN M., YILMAZ S. N., EROL A., Bork J., Zide J., DÖNMEZ Ö.  
18th International Nanoscience and Nanotechnology Conference, İstanbul, Turkey, 26 - 28 August 2024
- III. **An investigation of the doping effects on the structural properties of the  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> (001)**  
Yılmaz S. N., Doğan Ü., Sarcan F., Erol A., Kuş E., Nuhuğlu D., Taşaltın C., Öztürk Y., Dönmez Ö.

18th International Nanoscience and Nanotechnology Conference, İstanbul, Turkey, 26 - 28 August 2024, pp.42

- IV. **Yüksek Sıcaklığa Dayanıklı GaInP/GaAs heteroeklem Güneş Hücrelerinin Tasarım, Simülasyon ve Karakterizasyonu**  
Dolgun M. F., Dönmez Ö.  
Fen Fakültesi Fizik Bölümü İFD Poster Şenliği, İstanbul, Turkey, 24 May 2024, pp.1
- V. **Uyumsuz Malzemeler: Temel özellikler ve farklılık yaratan uygulamaları**  
Dönmez Ö.  
Astronomi ve Fizik Günleri (Boğaziçi Üniversitesi), İstanbul, Turkey, 20 - 21 April 2024
- VI. **Effect of rapid thermal annealing on structural and morphological properties of n-type GaAsBi epilayer**  
AYDIN M., DÖNMEZ Ö., EROL A.  
16th NANOSCIENCE & NANOTECHNOLOGY CONFERENCE, Ankara, Turkey, 5 - 08 September 2022
- VII. **An electric field induced hot electron transport in GaAsBi alloys**  
Aydın M., Mutlu S., Dönmez Ö., Erol A.  
NANOTR, Ankara, Turkey, 5 - 08 September 2022, pp.1
- VIII. **OPTICAL AND STRUCTURAL CHARACTERISATION OF TERNARY CHALCOGENIDE TLSEBSE2**  
Aydın M., Kuruoğlu F., Sarcan F., Dönmez Ö., Yıldırım S., Erol A.  
International Marmara Sciences Congress (Autumn) 2020, Kocaeli, Turkey, 4 - 05 December 2020, pp.49
- IX. **Electronic Transport Properties of Ga<sub>1-x-y</sub>Mn<sub>x</sub>CryAs Films**  
ÇOKDUYGULULAR E., DÖNMEZ Ö., EROL A., Güneş M.  
Türk Fizik Derneği 34. Uluslararası Fizik Kongresi, Muğla, Turkey, 5 - 09 September 2018, pp.277
- X. **Electrical Properties Of Modulation Doped Bi-Containing Highly Mismatched Quantum Well Structures**  
ÇETİNKAYA Ç., ÇOKDUYGULULAR E., DÖNMEZ Ö., EROL A., NUTKU F., YILDIRIM S.  
Turkish Physical Society 34th International Physics Congress, Muğla, Turkey, 5 - 09 September 2018, vol.34, pp.273
- XI. **EFFECT OF BI ALLOYING ON THE OPTICAL PROPERTIES OF MODULATION DOPED GAASBI/ALGAAS QUANTUM WELL STRUCTURES**  
ÇETİNKAYA Ç., ÇOKDUYGULULAR E., NUTKU F., DÖNMEZ Ö., EROL A.  
Türk Fizik Derneği 34. Uluslararası Fizik Kongresi, Muğla, Turkey, 5 - 09 September 2018, pp.273
- XII. **ELECTRONIC TRANSPORT IN n-type MODULATION DOPED GaInAs/GaAs and GaInNAs/GaAs QUANTUM WELL STRUCTURES**  
Rajhi A., Aydın M., ÇOKDUYGULULAR E., ÇETİNKAYA Ç., DÖNMEZ Ö., YILDIRIM S., SARCAN F., EROL A.  
Türk Fizik Derneği 34. Uluslararası Fizik Kongresi, Muğla, Turkey, 5 - 09 September 2018, pp.161
- XIII. **A study on deep level defect assisted absorption in dilute GaBiAs alloys**  
Dönmez Ö., Erol A.  
Turkish Physical Society 34. International Physics Congress, Muğla, Turkey, 3 - 07 September 2018, vol.1, no.1, pp.260
- XIV. **A study on deep level defect assisted absorption in dilute GaBiAs alloys**  
Dönmez Ö.  
Turkish Physical Society 34. International Physics Congress, Muğla, Turkey, 3 - 07 September 2018, vol.1, no.1, pp.260
- XV. **A Comparison Of Characteristics of Heterojunction pin Solar Cells Based On Dilute Bismide And Dilute Nitride Alloys**  
Muhammedgulyev A., SARCAN F., Göksel Ö., KINACI B., DÖNMEZ Ö., ÇELEBİ Y. G., EROL A.  
International Conference On Condensed Matter And Materials science, Adana, Turkey, 11 - 15 October 2017, pp.25
- XVI. **Optical and Electrical Properties of n- and p-type Modulation Doped GaAs<sub>1-x</sub>Bix/Al<sub>0.15</sub>Ga<sub>0.85</sub>As Single Quantum Well Heterostructure**  
ÇETİNKAYA Ç., ÇOKDUYGULULAR E., NUTKU F., DÖNMEZ Ö., Puustinen J., EROL A., Guina M.  
International Conference on Condensed Matter and Material Sciences, Adana, Turkey, 11 - 15 October 2017, pp.125
- XVII. **Photoluminescence Study of GaAs/AlGaAs and GaAsBi/AlGaAs Modulation Doped Quantum Well**

## Structures

- ÇETİNKAYA Ç., ÇOKDUYGULULAR E., NUTKU F., DÖNMEZ Ö., Puustinen J., EROL A., Guina M.  
Türk Fizik Derneği 33. Uluslararası Fizik Kongresi, Muğla, Turkey, 6 - 10 September 2017, pp.125
- XVIII. **Optical characterization of n- and p-type modulation doped GaAsBi/AlGaAs quantum well structures**  
ÇETİNKAYA Ç., ÇOKDUYGULULAR E., NUTKU F., DÖNMEZ Ö., Puustinen J., EROL A., Guina M.  
8. International Workshop on Bismuth-Containing Semiconductors Philipps-Universitat Marburg, Marburg, Germany, 23 - 26 July 2017, pp.125
- XIX. **Characterization Of Heterojunction pin solar Cells Based On Dilute Bismide And Dilute Nitride**  
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- XXI. **Electronic bandstructure of semiconductor dilute bismide structures**  
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- XXII. **CHARACTERIZATION OF HETERO-STRUCTURE SINGLE PIN JUNCTION SOLAR CELL BASED ON III-N-V AND III-Bi-V ALLOYS**  
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- XXIII. **Light Emission from Al<sub>0.08</sub>Ga<sub>0.92</sub>As Gunn Device**  
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- XXIV. **Electronic transport properties of p-type GaInNAs/GaAs quantum well structures**  
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- XXV. **Investigation of Electronic Transport Properties in GaInNAs/GaAs Quantum Well Structures**  
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- XXVI. **INVESTIGATION OF ELECTRONIC TRANSPORT PROPERTIES IN GaInNAs/GaAs QUANTUM WELL STRUCTURES**  
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- XXVIII. **Investigation of Light Emission Based on Gunn Effect in n -type GaAs**  
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- XXXVII. **Electronic Transport in n- and p-type modulation doped Ga<sub>1-x</sub>In<sub>x</sub>NyAs<sub>1-y</sub> /GaAs quantum well structures**  
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30th International Physics Congress by Turkish Physical Society, Muğla, Turkey, 1 - 02 September 2013, pp.1
- XXXVIII. **Effect of Alloy and Interface Roughness Scatterings On The Carrier Mobility in n- and p-type Modulation Doped GaInNAs/GaAs Quantum Well Structures**  
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- XLI. **USING INFRARED AND RAMAN SPECTROSCOPY TECHNIQUES IN ANALYSIS OF Ga<sub>1-x</sub>In<sub>x</sub>NyAs<sub>1-y</sub> /GaAs QUANTUM WELL STRUCTURES**  
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- DÖNMEZ Ö., AYDIN M., EROL A., YILDIRIM S., Project Supported by Higher Education Institutions, Katkılı GaAsBi/GaAs epilayer yapısının transport özelliklerinin incelenmesi, 2020 - 2023
- DÖNMEZ Ö., AYDIN M., EROL A., Project Supported by Higher Education Institutions, BİZMUT İÇEREN III-V GRUBU YARIİLETKENLERDE ELEKTRONİK TRANSPORT MEKANİZMALARININ İNCELENMESİ, 2019 - 2023
- EROL A., PERÇİN ÖZKORUCUKLU S., KURUOĞLU F., AKALIN E., CEVHER E., AK T., ULUTAŞ H. K., GÜL A., SIRMA EKMEKÇİ S., DÖNMEZ Ö., et al., Project Supported by Higher Education Institutions, İstanbul Üniversitesi Araştırma Laboratuvarları Sürekliliği Araştırma Desteği, 2018 - 2021
- EROL A., SARCAN F., KURUOĞLU F., ÇOKDUYGULULAR E., ÇETİNKAYA Ç., DÖNMEZ Ö., NUTKU F., KARA K., AKALIN E., Project Supported by Higher Education Institutions, Characterization of temperature dependent operation of a GaInAsbased RCEPD designed for 1.3 um, 2018 - 2018
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Dönmez Ö., Erol A., OPTİK OLARAK ÖLÇÜM YAPAN BİR MANYETİK ALAN ÖLÇÜM CİHAZI, Patent, CHAPTER G Physics, The Invention Registration Number: 2020-GE-512411 , Standard Registration, 2022

## Activities in Scientific Journals

Turkish Journal Of Electrical Engineering And Computer Sciences, Committee Member, 2019 - 2021

## Scientific Refereeing

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Materials Advances, Other journals, June 2022

JOURNAL OF PHYSICS D-APPLIED PHYSICS, National Scientific Refreed Journal, June 2022

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OPTİK, SCI Journal, May 2022

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PRAMANA-JOURNAL OF PHYSICS, National Scientific Refreed Journal, November 2020

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Sakarya Üniversitesi Fen Bilimleri Enstitüsü Dergisi, National Scientific Refreed Journal, September 2020  
OPTICS EXPRESS, SCI Journal, September 2020  
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Polymer Bulletin, SCI Journal, July 2020  
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Journal Of Physics D-Applied Physics, SCI Journal, July 2020  
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Semiconductor Science And Technology, SCI Journal, July 2020  
PHYSICA E-LOW-DIMENSIONAL SYSTEMS & NANOSTRUCTURES, SCI Journal, May 2020  
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Pramana-Journal Of Physics, Journal Indexed in SCI-E, January 2019  
Polymer Bulletin, SCI Journal, June 2018  
Optik, SCI Journal, April 2018  
Journal Of Magnetism And Magnetic Materials, SCI Journal, January 2018  
Politeknik Dergisi, National Scientific Refreed Journal, January 2018  
Canadian Journal Of Physics, Journal Indexed in SCI-E, January 2018  
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Polymer Bulletin, SCI Journal, July 2017  
Polymer Bulletin, SCI Journal, March 2017  
Politeknik, National Scientific Refreed Journal, September 2016  
Journal Of Magnetism And Magnetic Materials, SCI Journal, March 2016  
Balkan Physics Letters, Other Indexed Journal, February 2016

## **Scientific Consultations**

TUBITAK, Project Consultancy, Istanbul University, Faculty Of Science, Department Of Physics, Turkey, 2022 - Continues  
TUBITAK, Project Consultancy, Istanbul University, Faculty Of Science, Department Of Physics, Turkey, 2019 - 2021

## **Tasks In Event Organizations**

Erol A., Arıkan M. Ç., Nutku F., Dönmez Ö., Kara Koç K., Sarcan F., Cost Action MP 0805 Final Meeting, Novel Gain Materials and Devices Based on III-V-N/Bi Compounds, Scientific Congress, İstanbul, Turkey, Eylül 2013

## **Scientific Research / Working Group Memberships**

Nano&Optoelectronic Research, Istanbul University, Turkey, <https://nano-optoelectronics.istanbul.edu.tr/en/>, 2005 - Continues

## Mobility Activity

Research Scholarship Program, Get Education, Wrocław University of Science and Technology, Poland, 2011 - 2011

## Metrics

Publication: 87

Citation (WoS): 337

Citation (Scopus): 353

H-Index (WoS): 12

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## Congress and Symposium Activities

ELECTRONIC TRANSPORT PROPERTIES Of Ga<sub>1-x-y</sub>Mn<sub>x</sub>CryAs FILMS, TFD34, 2-9 Eylül 2018, Muğla, Attendee, Muğla, Turkey, 2018

Electronic Transport in n-type modulation doped GaInAs/GaAs and GaInNAs/GaAs quantum well structures, TFD34, 2-9 Eylül 2018, Muğla, Attendee, Turkey, 2018

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Optical and Electrical Properties of n- and p- type Modulation Doped GaAs<sub>1-x</sub>Bix/Al<sub>0.15</sub>Ga<sub>0.85</sub>As Single Quantum Well Heterostructure, INTERNATIONAL CONFERENCE ON CONDENSED MATTER AND MATERIALS SCIENCE, Ekim 2017, Adana, Poster, Attendee, Turkey, 2017

A comparison of characteristics of heterojunction pin solar cells based on dilute bismide and dilute nitride alloys, INTERNATIONAL CONFERENCE ON CONDENSED MATTER AND MATERIALS SCIENCE, Ekim 2017, Adana, Sozlu, Attendee, Adana, Turkey, 2017

Optical Properties of Different Oriented GaAsBi/GaAs QW grown by MBE, INTERNATIONAL CONFERENCE ON CONDENSED MATTER AND MATERIALS SCIENCE, Ekim 2017, Adana, Poster, Attendee, Adana, Turkey, 2017

Photoluminescence Study of GaAs/AlGaAs and GaAsBi/AlGaAs Modulation Doped Quantum Well Structures, TFD33, Eylül 2017, Sozlu, Attendee, Turkey, 2017

Influence of chemical process on structural and optical properties of as-grown and thermal annealed GaAsBi alloys, 8th International Workshop on Bismuth-Containing Semiconductors, Marburg/Almanya, Attendee, Magdeburg, Germany, 2017

Light Emission from Al<sub>0.08</sub>Ga<sub>0.92</sub>As Gunn Device Nanophotonics with nanomembrane, materials and architectures, Paris, Aralık 2016, Poster, Attendee, Paris, France, 2016

Characterization of hetero-structure single pin junction solar cells based on III-N-V and III-Bi alloys, SOLARTR 2016, Aralık 2016, Sozlu, Attendee, İstanbul, Turkey, 2016

Stimulated light emission from Gunn DOMAINS in fabry pérot al<sub>0.08</sub>Ga<sub>0.92</sub>As gunn device, TFD32, Eylül 2016, Mugla, Sozlu, Attendee, Turkey, 2016

INVESTIGATION of ELECTRONIC TRANSPORT PROPERTIES in GaInNAs/GaAs QUANTUM WELL STRUCTURES, TFD32, Eylül 2016, Mugla, Sozlu, Attendee, Turkey, 2016

Structural and Optical Investigation of Annealing Effects on GaBiAs Alloys, TFD32, Eylül 2016, Mugla, Sozlu, Attendee, Muğla, Turkey, 2016

Electronic Bandstructure of Semiconductor Dilute Bismide Structures, TFD32, Eylül 2016, Mugla, Sozlu, Attendee, Muğla, Turkey, 2016

Investigation of Light Emission Based on Gunn Effect in n - type GaAs, 9th International Physics Conference of the Balkan Physical Union-BPU9, 24-27 Ağustos 2015, İstanbul, Türkiye, poster, Attendee, İstanbul, Turkey, 2015

Optical and structural properties of as-grown and annealed GaAsBi epilayers, 9th International Physics Conference of the Balkan Physical Union-BPU9, 24-27 Ağustos 2015, İstanbul, Türkiye, sözlü, Attendee, İstanbul, Turkey, 2015

Temperature and electric field dependence of localization in modulation doped GaInNAs/GaAs quantum well structures, 9th International Physics Conference of the Balkan Physical Union-BPU9, 24-27 Ağustos 2015, İstanbul, Türkiye, sözlü, Attendee, İstanbul, Turkey, 2015

Weak Localization and Weak Antilocalization in n- and p-type Modulation Doped GaInNAs/GaAs Quantum Wells, World conference on technology, innovation and entrepreneurship, 28-30 May 2015, Istanbul, Turkey, oral, Attendee, İstanbul, Turkey, 2015

Photomodulated reflectance and Photoluminescence Study on GaAsBi Epilayers grown by Molecular Beam Epitaxy, 5th International Workshop on Bismuth-containing Semiconductors, Tyndall National Institute, University College Cork, Ireland, Attendee, Cork, Ireland, 2014

Magnetoresistance in n- and p-type GaInNAs-GaAs modulation doped quantum well structures, 31. International Physics Congress, 21-24 July 2014, Bodrum, Turkey, Oral, Attendee, Bodrum, Turkey, 2014

Analytic modeling of temperature dependence of 2D carrier mobility in as-grown and annealed GaInNAs/GaAs quantum well structures, TPS 31. International Physics Congress, 21-24 July 2014, Bodrum, Turkey, Oral, Attendee, Bodrum, Turkey, 2014

Electron g-factor in strained bulk GaAsBi, Compound Semiconductor Week 2014 Montpellier, France (Sözlü), Attendee, Montpellier, France, 2014

Photoreflectance spectroscopy of highly mismatched alloys, TPS 30. International Physics Congress, 2-5 September 2013, İstanbul, Turkey, Oral, Attendee, İstanbul, Turkey, 2013

Optical characterization of bulk GaBixAs<sub>1-x</sub> and GaAs/ GaBixAs<sub>1-x</sub> quantum well structures, Novel Gain Materials and Devices Based on III-V-N/Bi Compounds, 24-26 SEPTEMBER 2013, ISTANBUL, TURKEY, Oral, Attendee, İstanbul, Turkey, 2013

Thermal annealing- and Nitrogen-induced effects on electronic transport in n- and p-type modulation doped GaInNAs/GaAs quantum well structures, Novel Gain Materials and Devices Based on III-V-N/Bi Compounds, (Poster), Attendee, İstanbul, Turkey, 2013

Electronic transport in n - and p - type modulation doped Ga<sub>1-x</sub>In<sub>x</sub>NyAs<sub>1-y</sub> / GaAs quantum well structures, TPS 30. International Physics Congress, Attendee, İstanbul, Turkey, 2013

Optical characterization of dilute GaBiAs alloys, NanoTR IX, Erzurum, Turkey, 24-28 June 2013 (Sözlü bildiri), Attendee, Erzurum, Turkey, 2013

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Investigation of Nitrogen dependent in-plane electron and hole effective masses in GaInNAs/GaAs quantum well, "EURO MBE 2013", Attendee, Levi, Finland, 2013

Effects of alloy and interface roughness scatterings on the carrier mobility in n- and p-type modulation doped GaInNAs/GaAs quantum well structures, "EURO MBE 2013", Attendee, Levi, Finland, 2013

Optical and electrical properties of InN/GaN and GaN/InN/GaN heterostructures, "TPS 29. International Physics Congress", Attendee, Bodrum, Turkey, 2012

Non-destructive room temperature optical characterization of bulk and low dimensional semiconductor structures using modulation spectroscopy, "TPS 29. International Physics Congress", Attendee, Bodrum, Turkey, 2012

An analysis of scattering mechanisms as grown and annealed n- and p type modulation doped GaInNAs/GaAs quantum wells, "TPS 29. International Physics Congress", Attendee, Bodrum, Turkey, 2012

A comprehensive study of optical characterization of n- and p- type as-grown and annealed modulation doped GaAs/GaInNAs QW structures, ICSNN 2012, Attendee, Dresden, Germany, 2012

An analysis of Hall mobility in as-grown and annealed n- and p-type modulation doped GaInNAs/GaAs quantum wells, International Conference on Superlattices, "ICSNN 2012", Attendee, Dresden, Germany, 2012

Characterization of as-grown and annealed modulation doped Ga<sub>1-x</sub>In<sub>x</sub>NyAs<sub>1-y</sub> / GaAs quantum well structures using Infrared spectroscopy and Raman scattering techniques, "ICSNN 2012", Attendee, Dresden, Germany, 2012

The role of dislocation-induced scattering in electronic transport in Ga<sub>x</sub>In<sub>1-x</sub>N alloys, International Conference on Superlattices, Nanostructures, and Nanodevices, Dresden, Germany (Poster), Attendee, Dresden, Germany, 2012

A Study of Photomodulated Reflectance on Staircase n-type GaAs/Al<sub>[x]</sub>Ga<sub>[1-x]</sub>As Quantum Well Structures, "ICSNN 2012", Attendee, Dresden, Germany, 2012

Effects of an intense, high-frequency laser field on bound states in Ga<sub>1-x</sub>In<sub>x</sub>NyAs<sub>1-y</sub>/GaAs double quantum well, "ICSNN 2012", Attendee, Dresden, Germany, 2012

Analysis of Line Shape and Modulation Mechanisms on Low Dimensional Dilute Nitride structures, E-MRS 2012 Spring Meeting (Poster), Attendee, Strasbourg, France, 2012

Electronic transport properties of p-type GaInNAs/GaAs as-grown and annealed modulation doped quantum well structures, "ICTON2011", Attendee, Sweden, 2011

Optical characterization of the GaInNAs/GaAs n-type as-grown and annealed modulation doped quantum well structures, International Conference on Transparent Optical Networks (ICTON), (Poster), Attendee, Stockholm, Sweden, 2011

Optical and electrical properties of non-intentionally doped InN/GaN and GaN/InN/GaN heterostructures, International Conference on Transparent Optical Networks (ICTON), (Poster), Attendee, Stockholm, Sweden, 2011

An investigation of electronic transport properties of the 2D carriers in GaInNAs/GaAs modulation doped quantum well structure, (E-MRS) 2010 Spring Meeting, Attendee, Strasbourg, Germany, 2010

Photomodulated reflectance study of Al<sub>x</sub>Ga<sub>1-x</sub>As/GaAs Hot Electron Lasing and Light Emitting in Semiconductor Heterostructures, "Nano-TR V", Attendee, Eskişehir, Turkey, 2010

The effects of quantum well numbers and thermal annealing on optical properties of GaInNAs/GaAs quantum well structures, E-MRS 2010 Spring Meeting, Attendee, Strasbourg, Germany, 2010

The effects of quantum well numbers and thermal annealing on optical properties of GaInNAs/GaAs quantum well structures, MRS 2010 Spring Meeting, Attendee, Strasbourg, France, 2010

Optical and electrical properties of In-rich Ga<sub>x</sub>In<sub>1-x</sub>N structures, "European Materials Research Society (E-MRS) 2010 Spring Meeting", Attendee, Strasbourg, Germany, 2010

Hall measurement in n-type modulation doped Ga<sub>0.7</sub>In<sub>0.3</sub>N<sub>0.004</sub>As<sub>0.996</sub>/GaAs multi-quantum well structure under 950 nm IR light illumination, "Nano-TR V", Attendee, Eskişehir, Turkey, 2010

Influence of high electron concentration on band gap and effective electron mass of InN, "European Materials Research Society (E-MRS) 2010 Spring Meeting", Attendee, Strasbourg, Germany, 2010

Electronic transport in In-rich Ga<sub>x</sub>In<sub>1-x</sub>N, "European Materials Research Society (E-MRS) 2010 Spring Meeting", Attendee, Strasbourg, Germany, 2010

Spectral dependence and the Effect of Trapping in the Performance of GaInNAs / GaAs Multi-Quantum Well Solar Cells at Low Temperatures, (E-MRS) 2010 Spring Meeting, Attendee, Strasbourg, Germany, 2010

Electronic transport in GaInAs/GaAs and dilute nitride GaInNAs/GaAs Quantum Wells: Effect of Nitrogen on momentum relaxation of holes, (E-MRS) 2010 Spring Meeting, Attendee, Strasbourg, Germany, 2010

Reflectance and Photomodulated Reflectance Studies of Al<sub>x</sub>Ga<sub>1-x</sub>As/GaAs Hot Electron Lasing and Light Emitting in Semiconductor Heterostructures, ICO-PHOTONICS-DELPHI, Attendee, Delphi, Greece, 2009

## Scholarships

TUBİTAK-BİDEB, TUBİTAK, 2007 - 2008

TUBİTAK-BİDEB, TUBİTAK, 2006 - 2007

Üstün Başarı Bursu, University, 2004 - 2005

Üstün Başarı Bursu, University, 2003 - 2004

Üstün Başarı Bursu, University, 2002 - 2003

## Non Academic Experience

Ekrem BATUK Dershaneleri