

Assoc. Prof. DEFNE AKAY

Personal Information

Office Phone: +90 031 221 6890 Extension: 4

Email: dakay@science.ankara.edu.tr

Web: <https://avesis.ankara.edu.tr/dakay>

Address: Ankara Üniversitesi, 10. Yıl Yerleşkesi, B Blok Fizik Bölümü 06100 Tandoğan/ANKARA

International Researcher IDs

ScholarID: yOO7pTMAAAAJ

ORCID: 0000-0001-8990-007X

Publons / Web Of Science ResearcherID: AAQ-6181-2021

ScopusID: 56523020100

Yoksis Researcher ID: 111637

Biography

1985 yılında Ankara'da doğmuştur. İlkokul, ortaokul ve liseyi Ankara'da, lisans eğitimini Ankara Üniversitesi Fen Fakültesi Fizik Bölümü'nde tamamlamıştır. Yüksek lisans ve doktora derecelerini ise Ankara Üniversitesi Fen Bilimleri Enstitüsü Fizik Anabilim Dalı'nda almıştır.

2010 yılında Ankara Üniversitesi Fen Fakültesi Fizik Bölümü'nde araştırma görevlisi olarak akademik hayatına başlayan Defne Akay, 2016 yılında doktora eğitimi sürecini başarı ile tamamlamıştır. 2017 yılında TÜbitak 2219 doktora sonrası araştırma bursu ile ödüllendirilmiş ve Regensburg Üniversitesi Teorik Fizik Enstitüsünde "Quantum Transport and Spintronic" araştırma grubu ile 12 ay süreli çalışmıştır. 2021 yılında Doçent unvanını almış ve 2022 yılında Ankara Üniversitesi Fen Fakültesi Fizik Bölümü Matematiksel Fizik Anabilim Dalı'nda doçent kadrosuna atanmıştır.

TÜBİTAK 1001 Araştırma Projeleri kapsamında 2021-2024 yılları arasında proje yürütücülüğü yapmaktadır. Ayrıca yükseköğrenim destekli birçok önemli projede çalışmış, "Engineering on energy material" isimli kitabın editörlüğünü yapmıştır. TÜbitak Ulakbim ve diğer önemli indexlerde tanınmış "Gazi University Journal of Science Part A: Engineering and Innovation" dergisinde Alan Editörü olarak 2020 yılından beri görev yapmaktadır. Uluslararası birçok dergide hakemlikler yapmaktadır. SCI-Expanded taralı önemli dergilerde yayımlanmış çalışmaları bulunmaktadır. WOS verilerine göre H-indexi 13'tür. İyi derecede İngilizce bilmektedir.

Evli ve bir çocukludur.

Education Information

Post Doctorate, Universitaet Regensburg, Institut I - Theoretische Physik, Quantum Transport and Spintronics, Germany
2017 - 2018

Doctorate, Ankara University, Fen Bilimleri Enstitüsü, Fizik (Dr), Turkey 2010 - 2016

Postgraduate, Ankara University, Fen Bilimleri Enstitüsü, Fizik (YI) (Tezli), Turkey 2008 - 2010

Undergraduate, Ankara University, Fen Fakültesi, Fizik Bölümü, Turkey 2003 - 2007

Foreign Languages

English, C1 Advanced

Dissertations

Doctorate, Grafen tabanlı nano yapılarda topolojik etkiler, Ankara University, Fen Bilimleri Enstitüsü, Fizik (Dr), 2016
Postgraduate, Grafen tabanlı nano yapılarda safsızlık etkileri, Ankara University, Fen Bilimleri Enstitüsü, Fizik (Yl) (Tezli), 2010

Research Areas

Electronic, Energy, Physics, Interdisciplinary Physics and Related Science and Technology Areas, Materials Science, Mathematical Methods in Physics, Statistical physics, thermodynamic and nonlinear dynamic systems, Quantum Mechanics, Fields Theory and Relativity, Electrical properties of electronic structures, interfaces, thin films and low-dimensional structures, Electronic transport in condensed matter, Natural Sciences, Engineering and Technology

Academic Titles / Tasks

Associate Professor, Ankara University, Fen Fakültesi, Fizik Bölümü, 2021 - Continues
Research Assistant PhD, Ankara University, Fen Fakültesi, Fizik Bölümü, 2016 - 2021
Research Assistant PhD, Universitaet Regensburg, Faculty Of The Institute Of Theoretical Physics, Solid State Physics, 2017 - 2018
Research Assistant, Ankara University, Fen Fakültesi, Fizik Bölümü, 2010 - 2016

Academic and Administrative Experience

Faculty Board Member, Ankara University, Fen Fakültesi, Fizik Bölümü, 2024 - Continues

Courses

Dirac Materyalleri, Doctorate, 2024 - 2025
Physics-Faculty of Dentistry, Undergraduate, 2024 - 2025
Fizik I, Undergraduate, 2024 - 2025
Malzeme Fiziği, Postgraduate, 2022 - 2023
Düşük Sıcaklıklar Fiziği, Undergraduate, 2021 - 2022
Fizik II, Undergraduate, 2018 - 2019
Optik Lab., Undergraduate, 2016 - 2017

Advising Theses

Akay D., ..., Doctorate, M.Batuhan(Student), Continues
Akay D., MONOKALKOJENİTLERİN YAPISAL VE ELEKTRONİK ÖZELLİKLERİ, Postgraduate, M.Batuhan(Student), 2024

Jury Memberships

PhD Thesis Monitoring Committee Member, PhD Thesis Monitoring Committee Member, Gazi Üniversitesi, July, 2024

PhD Thesis Monitoring Committee Member, PhD Thesis Monitoring Committee Member, Gazi Üniversitesi, July, 2024
Doctoral Examination, Doctoral Examination, Gazi Üniversitesi, May, 2024
Post Graduate, Post Graduate, Gazi Üniversitesi, May, 2024
Doctoral Examination, Doctoral Examination, Gazi Üniversitesi, December, 2023
Post Graduate, Post Graduate, Gazi Üniversitesi, December, 2023
Doctoral Examination, Doctoral Examination, Gazi Üniversitesi, December, 2023
Doctoral Examination, Doctoral Examination, Gazi Üniversitesi, December, 2023
Doctoral Examination, Doctoral Examination, Gazi Üniversitesi, May, 2023
Doctoral Examination, Doctoral Examination, Gazi Üniversitesi, May, 2023
Doctoral Examination, Doctoral Examination, Gazi Üniversitesi, May, 2023
Post Graduate, Post Graduate, Gazi Üniversitesi, March, 2023
Doctoral Examination, Doctoral Examination, Gazi Üniversitesi, December, 2022
Post Graduate, Post Graduate, Gazi Üniversitesi, December, 2022
Post Graduate, Post Graduate, Gazi Üniversitesi, December, 2022
PhD Thesis Monitoring Committee Member, PhD Thesis Monitoring Committee Member, Gazi Üniversitesi, January, 2022

Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Damage mechanisms caused by radiation in Proton(ion beam) double interface layer nano-MOS structure**
AKAY D., Abay Ö., Sönmez H., GÖKMEN U., BİLGE OCAK S.
Radiation Physics and Chemistry, vol.227, 2025 (SCI-Expanded)
- II. **Emerging of high entropy alloy reinforced composites radiation shielding materials: Configurational structure and radiation shielding properties**
Akay D.
JOURNAL OF ALLOYS AND COMPOUNDS, pp.1-2, 2025 (SCI-Expanded)
- III. **Controlling the Intrinsic Charge Carrier Properties of Two-Dimensional Monochalcogenides (GeSe)**
AKAY D., Kocak M. B.
ACS Omega, vol.9, no.42, pp.42778-42785, 2024 (SCI-Expanded)
- IV. **Electrical characterization of Al/SnO₂/PbO/Si double layer MOS under the moderate radiation effect**
Akay D., Alkan S., Altin Z., Gökmen U., Ocak S. B.
RADIATION PHYSICS AND CHEMISTRY, vol.216, pp.1-19, 2024 (SCI-Expanded)
- V. **Characterization of electrical parameters in PbO/SnO₂ double layer semiconductor (DLS) diodes**
Seven E., AKAY D., BİLGE OCAK S., ERDOĞAN ORHAN İ.
Materials Science in Semiconductor Processing, vol.169, 2024 (SCI-Expanded)
- VI. **Semiconducting Double-Layer Lead Monoxide Tin Oxide Nanostructures for Photodetectors**
AKAY D., Seven E., GÖKMEN U., BİLGE OCAK S.
ACS APPLIED NANO MATERIALS, vol.6, no.19, pp.17482-17490, 2023 (SCI-Expanded)
- VII. **Electrical and optical properties of p-Si based structures with lead oxide interfaces**
Aydemir G. A., AKAY D., TATAROĞLU A., BİLGE OCAK S.
Materials Science and Engineering B: Solid-State Materials for Advanced Technology, vol.294, 2023 (SCI-Expanded)
- VIII. **Thermodynamic properties of the 2D generic helical edge states with quadrangular potential effects**
Alkan S., AKAY D.
PHYSICA SCRIPTA, vol.98, no.7, 2023 (SCI-Expanded)
- IX. **Beta-borophene under the circularly polarized radiation: polaritonic and polaronic dynamic band structure**
Akay D., Schliemann J.
EUROPEAN PHYSICAL JOURNAL PLUS, vol.137, pp.1273-1284, 2022 (SCI-Expanded)
- X. **Structural role of double layer amphoteric oxides forms on electrical conductivity: PbO/zinc oxide**

semiconductor

AKAY D., GÖKMEN U., BİLGE OCAK S.

PHYSICA SCRIPTA, vol.97, no.9, 2022 (SCI-Expanded)

- XI. **Mini band gap generation in magnetic beta-borophene: effects of optical phonon interaction**
AKAY D., Maiti S. K.
JOURNAL OF PHYSICS D-APPLIED PHYSICS, vol.55, no.25, 2022 (SCI-Expanded)
- XII. **Thermodynamic Properties and Optical Absorption of Polaron in Monolayer Graphene Under Laser Field**
Kenfack-Sadem C., Fobasso Mbognou F. C., Fotue A. J., Hounkonnou M. N., AKAY D., Fai L. C.
JOURNAL OF LOW TEMPERATURE PHYSICS, vol.203, no.3-4, pp.327-344, 2021 (SCI-Expanded)
- XIII. **Thermodynamics Properties and Optical Conductivity of Bipolaron in Graphene Nanoribbon Under Laser Irradiation**
Mbognou F. C. F., Kenfack-Sadem C., Fotue A. J., Hounkonnou M. N., AKAY D., Fai L. C.
JOURNAL OF LOW TEMPERATURE PHYSICS, vol.203, no.1-2, pp.204-224, 2021 (SCI-Expanded)
- XIV. **Manipulating electronic dynamics of 8-Pmmn borophene with surface optical phonons**
AKAY D.
SEMICONDUCTOR SCIENCE AND TECHNOLOGY, vol.36, no.4, 2021 (SCI-Expanded)
- XV. **Ionizing Radiation Influence on Rubrene-Based Metal Polymer Semiconductors: Direct Information of Intrinsic Electrical Properties**
AKAY D., GÖKMEN U., BİLGE OCAK S.
JOM, vol.72, no.6, pp.2391-2397, 2020 (SCI-Expanded)
- XVI. **TUNING THE ELECTRICAL PROPERTIES WITH HIGHER GAMMA-RAY IRRADIATION: POLY (METHYL METHACRYLATE)/LEAD OXIDE (PbO) COMPOSITE NANOSTRUCTURES**
AKAY D., BİLGE OCAK S.
SURFACE REVIEW AND LETTERS, vol.27, no.6, 2020 (SCI-Expanded)
- XVII. **An evaluation of dielectric qualities by using frequency dependence in superbenzene-ring based organic polymer-semiconductors**
AKAY D., GÖKMEN U., BİLGE OCAK S.
MATERIALS CHEMISTRY AND PHYSICS, vol.245, 2020 (SCI-Expanded)
- XVIII. **Radiation-induced changes on poly(methyl methacrylate) (PMMA)/lead oxide (PbO) composite nanostructure**
AKAY D., GÖKMEN U., BİLGE OCAK S.
PHYSICA SCRIPTA, vol.94, no.11, 2019 (SCI-Expanded)
- XIX. **Laser light and external magnetic field control of polaron in asymmetric quantum dot**
Fobasso M. F. C., Fotue A. J., Kenfack S. C., Ekengue C. M., Ngoufack C. D. G., AKAY D., Fai L. C.
SUPERLATTICES AND MICROSTRUCTURES, vol.129, pp.77-90, 2019 (SCI-Expanded)
- XX. **Stability and coherence of strong-coupling magneto-bipolaron in asymmetric quantum dot under laser field effect**
Fobasso M. F. C., Fotue A. J., Kenfack S. C., Bawe G. N., AKAY D., Fai L. C.
PHYSICS LETTERS A, vol.382, no.48, pp.3490-3499, 2018 (SCI-Expanded)
- XXI. **Study of frequency dependent characterization: applied gamma-ray irradiation on metal-polymer nanostructure**
AKAY D., Efil E., Kaymak N., ORHAN E., BİLGE OCAK S.
JOURNAL OF RADIOANALYTICAL AND NUCLEAR CHEMISTRY, vol.318, no.2, pp.1409-1417, 2018 (SCI-Expanded)
- XXII. **Photoinduced Dynamical Band Gap in Graphene: The Effects of Electron-Phonon and Spin-Orbit Interaction**
KANDEMİR B. S., AKAY D.
PHYSICA STATUS SOLIDI B-BASIC SOLID STATE PHYSICS, vol.255, no.10, 2018 (SCI-Expanded)
- XXIII. **Effect of gamma-ray irradiation on the electrical characteristics of Al/C24H12/p-Si nano-structure**
AKAY D., Karadeniz S., Selcuk A. B., BİLGE OCAK S.
PHYSICA SCRIPTA, vol.93, no.9, 2018 (SCI-Expanded)

- XXIV. **Trigonal warping and photo-induced effects on zone boundary phonon in monolayer graphene**
AKAY D.
SUPERLATTICES AND MICROSTRUCTURES, vol.117, pp.18-24, 2018 (SCI-Expanded)
- XXV. **The effect of electron-A(1g) phonon coupling in spin-orbit-coupled graphene**
KANDEMİR B. S., AKAY D.
PHILOSOPHICAL MAGAZINE, vol.97, no.25, pp.2225-2235, 2017 (SCI-Expanded)
- XXVI. **Tuning the pseudo-Zeeman splitting in graphene cones by magnetic field**
KANDEMİR B. S., Akay D.
JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS, vol.384, pp.101-105, 2015 (SCI-Expanded)

Articles Published in Other Journals

- I. **Circularly Polarized Light on Graphene with Trigonal Warping**
AKAY D.
Bitlis Eren Üniversitesi Fen Bilimleri Dergisi, vol.9, no.2, pp.697-702, 2020 (Peer-Reviewed Journal)
- II. **Triangular Potential Effects on the Fermi Velocity Renormalization in 8-Pmmn Borophene**
AKAY D.
Journal of Boron, vol.4, no.3, pp.153-157, 2019 (Peer-Reviewed Journal)
- III. **Off plane Impurity Effects in Graphene Quantum Dots**
KANDEMİR B. S., AKAY D.
Cumhuriyet University Faculty of Science, vol.37, no.1, pp.20-29, 2016 (Peer-Reviewed Journal)

Books & Book Chapters

- I. **Comparison Of Electronic Properties Of Poly (Methyl Methacrylate) With The Double Heterostructure (Pmma/ Lead Oxides)**
AKAY D., GÖKMEN U., BİLGE OCAK S.
in: Engineering on Energy Materials, Akay Defne, Editor, Iksad Publications, Ankara, pp.1-30, 2020

Refereed Congress / Symposium Publications in Proceedings

- I. **LIGHT IRRADIATION EFFECT ON THE TOPOLOGY OF β -BOROPHENE**
AKAY D.
IV. INTERNATIONAL ANKARA CONFERENCE ON SCIENTIFIC RESEARCH, Ankara, Turkey, 10 - 11 April 2021
- II. **DYNAMIC CHARGE CARRIERS IN LOW-SYMMETRIC AND ANISOTROPIC 2D DIRAC MATERIAL: 8-PMMN BOROPHENE**
AKAY D.
CUKUROVA 6th INTERNATIONAL SCIENTIFIC RESEARCHES CONFERENCE, Adana, Turkey, 5 - 06 March 2021
- III. **Characterization Of Electrical Properties Of PMMA/Pbo Structures**
BİLGE OCAK S., AKAY D., GÖKMEN U.
türk fizik derneği 35. uluslararası fizik kongresi, Muğla, Turkey, 5 - 09 September 2019, vol.1, pp.251-254
- IV. **Analyses Of Diode Parameters Using C-V and G-V Characteristics Of Al/PMMA/PbO/P-Si Structures**
BİLGE OCAK S., AKAY D., GÖKMEN U.
türk fizik derneği 35. uluslararası fizik kongresi, Muğla, Turkey, 4 - 08 September 2019, vol.1, pp.255-260
- V. **GAMMA-RAY IRRADIATION IMPACTS ON THE CURRENTVOLTAGERELATIONS OF RUBRENE BASED ORGANIC METALPOLYMER SEMICONDUCTORS**
BİLGE OCAK S., AKAY D., GÖKMEN U.
7. EUROPEAN CONFERENCEONRENEWABLE ENERGY SYSTEMS, Madrid, Spain, 10 - 12 June 2019

- VI. **ELECTRONIC AND CONDUCTIVITY CHARACTERISTICS OF RUBRENE PENTAGON BASED SCHOTTKY BARRIER DIODES(SBDs): C₆₀ GAMMA-RAY IRRADIATION**
BİLGE OCAK S., AKAY D., GÖKMEN U.
7. EUROPEAN CONFERENCE ON RENEWABLE ENERGY SYSTEMS, Madrid, Spain, 10 - 12 June 2019
- VII. **Frequency Dependent Effects Before and After Gamma-Ray Irradiation on Al/ C₄₂H₂₈/p-Si Structure**
KAYMAK N., EFİL E., AKAY D., SEVEN E., ORHAN E., BİLGE OCAK S.
V. International Conference on Materials Science and Nanotechnology for Next Generations (MSNG2018), Nevşehir, Turkey, 4 - 06 October 2018, pp.199-201
- VIII. **Tuning the dynamical band gap in graphene by Haldane interaction**
AKAY D., KANDEMİR B. S.
international congress on semiconductor materials and devices (ICSMD-2017), 17 - 19 August 2017
- IX. **Gamma-Ray Irradiation Effects on Electric Characteristics of Al/C₂₄ H₁₂ /P Si Structures**
AKAY D., SELÇUK A. B., KARADENİZ S., BİLGE OCAK S.
INTERNATIONAL CONGRESS ON SEMICONDUCTOR MATERIALS AND DEVICES ICSMD-2017, Konya, Turkey, 17 - 19 August 2017, pp.73
- X. **Investigation of Frequency Dependent Effects Before And After Gamma-Ray Irradiation on Al/C₂₄ H₁₂ /P-Si Structures**
AKAY D., SELÇUK A. B., KARADENİZ S., BİLGE OCAK S.
INTERNATIONAL CONGRESS ON SEMICONDUCTOR MATERIALS AND DEVICES ICSMD-2017, Konya, Turkey, 17 - 19 August 2017, pp.72
- XI. **Spin Yörünge Kuplajlı Grafende Elektron A_{1g} Fonon Etkileşmesi**
AKAY D., KANDEMİR B. S.
yoğun madde fiziği ankara toplantısı, Ankara, Turkey, 19 December 2016
- XII. **Magnetic Field Effects on Parabolic Graphene Quantum Dots with Topological Defects**
AKAY D., KANDEMİR B. S.
18th International Conference on Engineering Materials and Applications, İstanbul, Turkey, 25 - 26 January 2016, vol.10, pp.54-58
- XIII. **The Effect of Tilted Magnetic Field in Graphene Cone**
AKAY D.
World Conference on Technology, Innovation and Entrepreneurship, İstanbul, Turkey, 28 - 30 May 2015, pp.2086-2093
- XIV. **Topolojik Kusurlu Grafen Konilerin Eğik Bir Manyetik Alanda Sınırlanması**
AKAY D., Ertem Ü.
20. Yoğun Madde Fiziği Ankara Toplantısı, Turkey, 26 December 2014
- XV. **Topological Defects in Graphene**
AKAY D., KANDEMİR B. S.
Graphene and related material 2014, İzmir, Turkey, 9 - 11 July 2014

Supported Projects

Akay D., TÜBİTAK Project, İki Boyutlu Ferroelektrik (Monokalkojenit) Malzemelerde Anormal Yığın Fotovoltaik Etki: İkinci Dereceden Tepki Teorisinde Elektron-Yüzey Optik Fonon Etkileşimi, 2021 - 2024

Akay D., Gökmen U., Project Supported by Higher Education Institutions, AZ91 ve Al-Cu Esaslı Seramik Parçacık (B₄C) Takviyeli Kompozit Malzeme Üretimi ve Radyoaktif Zırhlama Özelliklerinin İncelenmesi, 2020 - 2022

Akay D., Bilge Ocak S., Project Supported by Higher Education Institutions, Pestisit Kalıntı Analizi için Grafen Oksit Kullanarak Elektrokimyasal Sensör Tasarımı ve Analiz Metodunun Validasyonu, 2020 - 2022

Moğulkoç A., Kandemir B. S., AKAY D., TÜBİTAK Project, Grafende masa üstü parçacık fiziği ve gravitasyon, 2013 - 2016

Akay D., Kandemir B. S., Project Supported by Higher Education Institutions, Karbon nano yapılar grafen dot grafen anti dot ve Karbon nanotüpler, 2012 - 2013

Activities in Scientific Journals

Gazi University Journal of Science Part A: Engineering and Innovation, Committee Member, 2021 - Continues

Scientific Refereeing

TUBITAK Project, 1001 - Program for Supporting Scientific and Technological Research Projects, Yildiz Technical University, Turkey, December 2024

EUROPEAN PHYSICAL JOURNAL PLUS, Journal Indexed in SCI-E, November 2024

EUROPEAN PHYSICAL JOURNAL PLUS, Journal Indexed in SCI-E, September 2024

JOURNAL OF MATERIALS SCIENCE, Journal Indexed in SCI-E, July 2024

EUROPEAN PHYSICAL JOURNAL PLUS, Journal Indexed in SCI-E, June 2024

EUROPEAN PHYSICAL JOURNAL PLUS, Journal Indexed in SCI-E, April 2024

EUROPEAN PHYSICAL JOURNAL PLUS, Journal Indexed in SCI-E, December 2023

EUROPEAN PHYSICAL JOURNAL PLUS, Journal Indexed in SCI-E, November 2023

EUROPEAN PHYSICAL JOURNAL PLUS, Journal Indexed in SCI-E, October 2023

INDIAN JOURNAL OF PHYSICS, Journal Indexed in SCI-E, September 2023

EUROPEAN PHYSICAL JOURNAL PLUS, Journal Indexed in SCI-E, July 2023

JOURNAL OF APPLIED PHYSICS, Journal Indexed in SCI-E, July 2023

INDIAN JOURNAL OF PHYSICS, Journal Indexed in SCI-E, July 2023

TUBITAK Project, 1001 - Program for Supporting Scientific and Technological Research Projects, Gazi University, Turkey, June 2023

TUBITAK Project, 1001 - Program for Supporting Scientific and Technological Research Projects, Yildiz Technical University, Turkey, June 2023

EUROPEAN PHYSICAL JOURNAL PLUS, Journal Indexed in SCI-E, May 2023

JOURNAL OF APPLIED PHYSICS, Journal Indexed in SCI-E, May 2023

EUROPEAN PHYSICAL JOURNAL PLUS, Journal Indexed in SCI-E, March 2023

JOURNAL OF MATERIALS SCIENCE, Journal Indexed in SCI-E, July 2022

JOURNAL OF MATERIALS SCIENCE, Journal Indexed in SCI-E, June 2022

Scientific Consultations

Tübitak, Scientific Consultancy, Ankara University, Fen Fakültesi, Fizik Bölümü, Turkey, 2024 - 2024

Tasks In Event Organizations

Akay D., 3rd INTERNATIONAL RAHVA TECHNICAL AND SOCIAL RESEARCHES CONGRESS, Scientific Congress, Turkey, Aralık 2023

Metrics

Publication: 45

Citation (WoS): 303

Citation (Scopus): 300

H-Index (WoS): 13

H-Index (Scopus): 12

Scholarships

2219, TUBITAK, 2017 - 2018

Artistic Activity

AKAY D., 2017 yılında Tübitak 4007 Bilim Şenlikleri Destekleme Programı kapsamında "Bilim Yolculuğu" adlı etkinlikte " Atölye Lideri " olarak katkı verilmiştir. , July 2017

AKAY D., 2016 yılında Tübitak 4007 Bilim Şenlikleri Destekleme Programı kapsamında "Şimdi Bilim Gerçek Hayat Atölyelerinde Herkes İçin" adlı etkinlikte Rehber olarak katkı verilmiştir., May 2016