

# Prof. ŞEVKET ŞİMŞEK

## Personal Information

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## Education Information

Doctorate, Cukurova University, Fen Bilimleri Enstitüsü, Fizik (Dr), Turkey 2008 - 2011

Postgraduate, Cukurova University, Fen Bilimleri Enstitüsü, Fizik (YI) (Tezli), Turkey 2004 - 2008

Undergraduate, Erciyes University, Yozgat Fen-Edebiyat Fakültesi, Fizik Pr., Turkey 2000 - 2004

## Dissertations

Doctorate, ABO<sub>3</sub> (A=Ag, Na B=Nb, Ta) tipi kristallerin dinamik özelliklerinin Ab initio yöntemiyle incelenmesi, Cukurova University, Fen Bilimleri Enstitüsü, Fizik (Dr), 2011

Postgraduate, AgNbO<sub>3</sub> ve AgTaO<sub>3</sub> kristallerinin elektronik band yapısı ve optik özelliklerinin incelenmesi, Cukurova University, Fen Bilimleri Enstitüsü, Fizik (YI) (Tezli), 2008

## Academic Titles / Tasks

Professor, Hakkari University, Mühendislik Fakültesi, Malzeme Bilimi Ve Mühendisliği Bölümü, 2022 - Continues  
Associate Professor, Hakkari University, Mühendislik Fakültesi, Malzeme Bilimi Ve Mühendisliği Bölümü, 2018 - Continues

Hakkari University, Mühendislik Fakültesi, Malzeme Bilimi Ve Mühendisliği Bölümü, 2013 - 2018

## Academic and Administrative Experience

Hakkari University, 2022 - Continues

Hakkari University, 2021 - Continues

Hakkari University, 2019 - Continues

Hakkari University, 2019 - Continues

Hakkari University, 2018 - Continues

Hakkari University, 2021 - 2022

Hakkari University, 2013 - 2019

Hakkari University, 2016 - 2018

Hakkari University, 2013 - 2017

## Courses

Genel Fizik II, Undergraduate, 2021 - 2022, 2020 - 2021, 2019 - 2020, 2018 - 2019  
Fizikte Matematik Metodları II, Postgraduate, 2021 - 2022, 2020 - 2021, 2019 - 2020  
Fotonik, Postgraduate, 2021 - 2022, 2020 - 2021, 2019 - 2020  
Genel Fizik I, Undergraduate, 2021 - 2022, 2020 - 2021, 2019 - 2020, 2018 - 2019  
Yoğunluk Fonksiyoneli Teorisi, Postgraduate, 2021 - 2022, 2020 - 2021, 2018 - 2019  
Lineer ve Lineer Olmayan Optik, Postgraduate, 2021 - 2022, 2020 - 2021, 2019 - 2020, 2018 - 2019  
Matematik I, Undergraduate, 2021 - 2022  
Malzeme Modelleme Teknikleri, Postgraduate, 2021 - 2022  
Elektromanyetik Teori II, Postgraduate, 2021 - 2022  
Malzeme Modelleri Teknikleri, Postgraduate, 2020 - 2021, 2018 - 2019  
Elektromanyetik Teori I, Postgraduate, 2020 - 2021, 2018 - 2019  
Fizikte Matematik Metodları II, Postgraduate, 2018 - 2019  
Katı Hal Fiziği I, Postgraduate, 2018 - 2019

## Advising Theses

ŞEVKET Ş., Katkılı titanyum dioksitin yapısal, mekanik ve optik özelliklerinin incelenmesi: Ab initio hesabı, Doctorate, A.AKYOL(Student), 2023  
ŞEVKET Ş., Re<sub>2</sub>O<sub>3</sub> (Re: Gd, Tb ve Dy) BİLEŞİKLERİNİN ELEKTRONİK, OPTİK VE MEKANİK ÖZELLİKLERİNİN İNCELENMESİ: AB İNİTİO HESABI, Postgraduate, S.DURMAN(Student), 2023  
ŞEVKET Ş., Ta katkılı LiNbO<sub>3</sub>'ün elektronik, optik ve mekanik özelliklerinin incelenmesi: Ab initio hesabı, Postgraduate, F.ACAR(Student), 2022

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

- I. **The Mechanical, Electronic and Optical Properties of Sn<sub>2</sub>P<sub>2</sub>S<sub>6</sub> Compound in Different Phases**  
Koc H., Palaz S., ŞİMŞEK Ş., Mamedov A. M., Ozbay E.  
Integrated Ferroelectrics, vol.220, no.1, pp.56-70, 2021 (SCI-Expanded)
- II. **Elastic and optical properties of sillenites: First principle calculations**  
Koc H., Palaz S., ŞİMŞEK Ş., Mamedov A. M., Ozbay E.  
Ferroelectrics, vol.557, no.1, pp.98-104, 2020 (SCI-Expanded)
- III. **Complete photonic band gaps in Sn<sub>2</sub>P<sub>2</sub>X<sub>6</sub> (X = S, Se) supercell photonic crystals**  
ŞİMŞEK Ş., Palaz S., Koc H., Mamedov A. M., Ozbay E.  
Ferroelectrics, vol.557, no.1, pp.92-97, 2020 (SCI-Expanded)
- IV. **Photonic band gap of multiferroic-dielectric materials in the IR region: FDTD method**  
Palaz S., ŞİMŞEK Ş., Mamedov A. M., Ozbay E.  
Ferroelectrics, vol.539, no.1, pp.50-54, 2019 (SCI-Expanded)
- V. **Structural, Electronic, and Mechanical Properties of A<sub>3</sub>Mn<sub>2</sub>O<sub>7</sub> (A = Sr, Ca): Ab Initio Calculation**  
ŞİMŞEK Ş., Koc H., Mamedov A. M., Ozbay E.  
Ferroelectrics, vol.538, no.1, pp.135-145, 2019 (SCI-Expanded)
- VI. **Strain effects and electronic structures of narrow band P-R ferroelectrics: First principles calculation**  
Bozdag N., Koc H., ŞİMŞEK Ş., Mamedov A. M., Ozbay E.  
Ferroelectrics, vol.544, no.1, pp.1-10, 2019 (SCI-Expanded)
- VII. **Electronic band structure of Rare-Earth Ferroelastics: Theoretical investigations**  
ŞİMŞEK Ş., UĞUR G., UĞUR Ş., Mamedov A. M., Ozbay E.  
Journal of Optoelectronics and Advanced Materials, vol.20, no.1-2, pp.69-73, 2018 (SCI-Expanded)
- VIII. **Spectral scalability and optical spectra of fractal multilayer structures: FDTD analysis**  
ŞİMŞEK Ş., Palaz S., Mamedov A. M., Ozbay E.

Applied Physics A: Materials Science and Processing, vol.123, no.1, 2017 (SCI-Expanded)

- IX. **Optical and electronic properties of orthorhombic and trigonal AX<sub>3</sub> (A=Cd, Zn; X=Sn, Ge): First principle calculation**  
Ozisik H., ŞİMŞEK Ş., Deligoz E., Mamedov A. M., Ozbay E.  
Ferroelectrics, vol.498, no.1, pp.73-79, 2016 (SCI-Expanded)
- X. **Topological insulator based locally resonant phononic crystals: Wave propagation and acoustic band gaps**  
Oltulu O., ŞİMŞEK Ş., Mamedov A. M., Ozbay E.  
Ferroelectrics, vol.499, no.1, pp.123-129, 2016 (SCI-Expanded)
- XI. **Optical properties of the narrow-band ferroelectrics: First principle calculations**  
Koc H., ŞİMŞEK Ş., Mamedov A. M., Ozbay E.  
Ferroelectrics, vol.483, no.1, pp.43-52, 2015 (SCI-Expanded)
- XII. **Ferroelectric based photonic crystal cavity by liquid crystal infiltration**  
Karaomerlioglu F., ŞİMŞEK Ş., Mamedov A. M., Ozbay E.  
Integrated Ferroelectrics, vol.158, no.1, pp.1-12, 2014 (SCI-Expanded)
- XIII. **Electron spectroscopy and the electronic structure of KNbO<sub>3</sub>: First principle calculations**  
ŞİMŞEK Ş., Koc H., Trepakov V., Mamedov A., Ozbay E.  
Ferroelectrics, vol.461, no.1, pp.99-105, 2014 (SCI-Expanded)
- XIV. **Two-dimensional ferroelectric photonic crystals: Optics and band structure**  
Simsek Ş., Mamedov A. M., Ozbay E.  
Ferroelectrics, vol.448, no.1, pp.23-28, 2013 (SCI-Expanded)
- XV. **First-principles calculation of the linear and nonlinear optical properties of LiTaO<sub>3</sub>**  
ÇABUK S., Simsek Ş.  
Physica Scripta, vol.81, no.5, 2010 (SCI-Expanded)

## Articles Published in Other Journals

- I. **Investigation of Electronic, Elastic and Dynamic Properties of AgNbO<sub>3</sub> and AgTaO<sub>3</sub> under Pressure: Ab Initio Calculation**  
ŞİMŞEK Ş.  
Scientific Research Publishing, Inc., vol.13, pp.57-77, 2023 (Peer-Reviewed Journal)
- II. **Fibonacci sequences quasiperiodic A<sub>5</sub>B<sub>6</sub>C<sub>7</sub> ferroelectric based photonic crystal: FDTD analysis**  
ŞİMŞEK Ş., Palaz S., Mamedov A. M., Ozbay E.  
Advanced Electromagnetics, vol.6, no.4, pp.6-10, 2017 (Scopus)
- III. **A<sub>1</sub>B<sub>1</sub>II<sub>1</sub>CVI<sub>2</sub> (A = Cu, Ag; B = Ga, In; C = S, Se, Te) based photonic crystal superlattices: Optical properties**  
ŞİMŞEK Ş., Palaz S., Akhundov C., Mamedov A. M., Ozbay E.  
Physica Status Solidi (C) Current Topics in Solid State Physics, vol.14, no.6, 2017 (Scopus)
- IV. **Phononic band gap and wave propagation on polyvinylidene fluoride-based acoustic metamaterials**  
OLTULU O., ŞİMŞEK Ş., MAMEDOV A. M., ÖZBAY E.  
Cogent Physics, vol.3, no.1, 2016 (Peer-Reviewed Journal)
- V. **Band gap and optical transmission in the Fibonacci type one-dimensional A<sub>5</sub>B<sub>6</sub>C<sub>7</sub> based photonic crystals**  
ŞİMŞEK Ş., Koc H., Palaz S., Oltulu O., Mamedov A. M., Ozbay E.  
Physica Status Solidi (C) Current Topics in Solid State Physics, vol.12, no.6, pp.540-544, 2015 (Scopus)
- VI. **Mechanical, electronic, and optical properties of the A<sub>4</sub>B<sub>6</sub> layered ferroelectrics: Ab initio calculation**  
Koc H., ŞİMŞEK Ş., Palaz S., Oltulu O., Mamedov A. M., Ozbay E.  
Physica Status Solidi (C) Current Topics in Solid State Physics, vol.12, no.6, pp.651-658, 2015 (Scopus)
- VII. **Electronic and Optical Properties of Dy<sub>2</sub>O<sub>3</sub> ab initio calculation**

HOROZ S., ŞİMŞEK Ş., PALAZ S., MAMEDOV A. M., ÖZBAY E.

International Journal of Scientific and Technological Research, vol.1, no.4, pp.36-43, 2015 (Peer-Reviewed Journal)

VIII. **Electronic and Optical Properties of Rare Earth Oxides: Ab Initio Calculation**

HOROZ S., ŞİMŞEK Ş., PALAZ S., MAMEDOV A. M.

World Journal of Condensed Matter Physics, vol.5, no.02, pp.78-85, 2015 (Peer-Reviewed Journal)

IX. **2D Anisotropic Photonic Crystals of Hollow Semiconductor Nanorod with Liquid Crystals**

KARAÖMERLİOĞLU F., ŞİMŞEK Ş., MAMEDOV A. M., ÖZBAY E.

APPLIED MECHANICS AND MATERIALS, vol.394, pp.38-44, 2013 (Scopus)

X. **Electron Energy Loss Spectroscopy and the Electronic Structure of Some Ternary Oxides First Principle Calculations**

ŞİMŞEK Ş., MAMEDOV A. M., ÖZBAY E.

Azerbaijan Journal of Physics (FIZIKA), vol.19, no.2, pp.61-66, 2013 (Peer-Reviewed Journal)

## Books & Book Chapters

I. **ABO<sub>3</sub> (A=Ag, Na; B=Nb, Ta) TİPİ KRİSTALLERİN DİNAMİK ÖZELLİKLERİNİN AB İNİTİO YÖNTEMİYLE İNCELENMESİ**

ŞİMŞEK Ş.

Livre de Lyon, Lyon, 2022

## Refereed Congress / Symposium Publications in Proceedings

I. **Incommensurate Phase Transition and Electronic Properties of BaMnF<sub>4</sub>**

Palaz S., ŞİMŞEK Ş., Koc H., Babayeva R., Mamedov A. M., Ozbay E.

5th International Conference on Competitive Materials and Technology Processes, IC-CMTP 2018, Miskolc-Lillafured, Hungary, 8 - 12 October 2018, vol.613

II. **Elastic and Optical Properties of Sillenites: First Principle Calculations**

KOÇ H., PALAZ S., ŞİMŞEK Ş., MAMEDOV A. M., ÖZBAY E.

EMF 2019, 14th European Meeting of Ferroelectricity, Lausanne, Switzerland, 14 - 19 July 2019

III. **Tin Thiohypodiphosphate (Sn<sub>2</sub>P<sub>2</sub>S<sub>6</sub>): Linear and Nonlinear Properties Under High Pressure**

KOÇ H., PALAZ S., ŞİMŞEK Ş., MAMEDOV A. M., ÖZBAY E.

EMF 2019, 14th European Meeting of Ferroelectricity, Lausanne, Switzerland, 14 - 19 July 2019

IV. **Complete Photonic Band Gaps in Sn<sub>2</sub>P<sub>2</sub>X<sub>6</sub> (X=S, Se) Supercell Photonic Crystals**

ŞİMŞEK Ş., PALAZ S., KOÇ H., MAMEDOV A. M., ÖZBAY E.

EMF 2019, 14th European Meeting of Ferroelectricity, Lausanne, Switzerland, 14 - 19 July 2019

V. **Sn<sub>2</sub>P<sub>2</sub>X<sub>2</sub> (X=S, Se) as novel materials for phononic crystals**

Palaz S., Ozer Z., ŞİMŞEK Ş., Koc H., Mamedov A. M., Ozbay E.

10th International Conference on Metamaterials, Photonic Crystals and Plasmonics, META 2019, Lisbon, Portugal, 23 - 26 July 2019, pp.1596

VI. **Complex Band Structure and Dispersion Relation of Acoustic Waves in Piezoelectric Based Topological Phononic Crystals**

Palaz S., Ozer Z., ŞİMŞEK Ş., Koc H., Mamedov A. M., Ozbay E.

10th International Conference on Metamaterials, Photonic Crystals and Plasmonics, META 2019, Lisbon, Portugal, 23 - 26 July 2019, pp.1647

VII. **Photonic Band Gap of Multiferroic-Dielectric Materials in IR region:FDTD method**

PALAZ S., ŞİMŞEK Ş., ÖZER Z., Mamedov A. M., ÖZBAY E.

14th Russia/CIS/Baltic/Japan Symposium on Ferroelectricity, St. Petersburg, Russia, 14 - 18 May 2018

VIII. **Structural, Elektronic and Mechanical Properties of A<sub>3</sub>Mn<sub>2</sub>O<sub>7</sub> (A=Sr, Ca): ab initio calculation**

ŞİMŞEK Ş., KOÇ H., MAMEDOV A. M., ÖZBAY E.

14 th Russia/CIS/Baltic/Japan Symposium on Ferroelectricity, St. Petersburg, Russia, 14 - 18 May 2018

- IX. **Optical Properties of Ferroelectric Nanorods**  
KARAÖMERLİOĞLU F., ŞİMŞEK Ş., MAMEDOV A. M., ÖZBAY E.  
2nd International Mediterranean Science and Engineering Congress (IMSEC 2017), 25 - 27 October 2017
- X. **Investigation of Electronic, Elastic and Dynamic Properties of AgBO<sub>3</sub> (B: Nb, Ta) Under Pressure: First Principle Calculation**  
ŞİMŞEK Ş.  
IV. INTERNATIONAL MULTIDISCIPLINARY CONGRESS OF EURASIA, 23 - 25 August 2017
- XI. **Electronic band structure and optical properties of Gd<sub>2</sub>(MoO<sub>4</sub>)<sub>3</sub>: First Principle calculations**  
Mamedov A. M., ŞİMŞEK Ş., UĞUR G., UĞUR Ş., ÖZBAY E.  
The Fourteenth International Meeting on Ferroelectricity-2017, 4 - 08 September 2017
- XII. **Ab initio calculation of AgXO<sub>3</sub> X Nb Ta under pressure**  
ŞİMŞEK Ş.  
2nd International Congress on The World of Technology and Advanced Materials 28 September-02 October 2016  
Kırşehir/Turkey, 28 September - 02 October 2016
- XIII. **AIBIICVI2 A Cu Ag B Ga In C S Se Te Based Photonic Crystal Superlattices Optical Properties**  
ŞİMŞEK Ş., PALAZ S., Akhundov C., M Mamedov A., ÖZBAY E.  
ICTMC20 - 20th International Conference on Ternary and Multinary Compounds, 5 - 09 September 2016
- XIV. **Spectral Scalability and Optical Spectra of Fractal Multilayer Structures FDTD analysis**  
ŞİMŞEK Ş., PALAZ S., M Mamedov A., ÖZBAY E.  
The 7th International Conference on Metamaterials, Photonic Crystals and Plasmonics - META'16 Malaga - Spain, 25 - 28 July 2016
- XV. **A5B6C7 FERROELECTRIC**  
PALAZ S., ŞİMŞEK Ş., M Mamedov A., ÖZBAY E.  
Joint RCBJSF-IWRF Conference, Matsue, 2016  
13th Russia/CIS/Baltic/Japan Symposium on Ferroelectricity International Workshop on Relaxor Ferroelectrics 2016, 19 - 23 June 2016
- XVI. **Fibonacci Sequences Quasiperiodic Nonlinear Photonic Crystals FDTD Analysis**  
ŞİMŞEK Ş., OLTULU O., MAMEDOV A. M., ÖZBAY E.  
13th European Meeting on Ferroelectricity (EMF 2015), Porto, Portugal, 28 June - 03 July 2015
- XVII. **Topological Insulator Based Locally Resonant Phononic Crystals Wave Propagation and Acoustic Band Gaps**  
OLTULU O., ŞİMŞEK Ş., MAMEDOV A. M., ÖZBAY E.  
13th European Meeting on Ferroelectricity (EMF 2015), Porto, Portugal, 28 June - 03 July 2015
- XVIII. **Electronic Band Structure of Rare Earth Ferroelastics Theoretical Investigations**  
ŞİMŞEK Ş., UĞUR G., UĞUR Ş., AMİRULLAH M M., ÖZBAY E.  
13th European Meeting on Ferroelectricity (EMF 2015), Porto, Portugal, 28 June - 03 July 2015
- XIX. **Born Effective Charge Parameters of Some Narrow Band Ferroelectrics**  
ŞİMŞEK Ş., KOÇ H., UĞUR Ş., MAMEDOV A. M., ÖZBAY E.  
13th European Meeting on Ferroelectricity (EMF 2015), Porto, Portugal, 28 June - 03 July 2015
- XX. **Investigation of Transmission Properties of Double Grating Structures Made of Different Metallic Materials FDTD Study**  
KARAÇORA NANE F., ŞİMŞEK Ş.  
9th International Conference on Magnetic and Superconducting Materials (MSM15), 30 April - 03 May 2015
- XXI. **Band Structure and Optical Properties of anisotropic SbSI Photonic Crystal**  
KARAÇORA NANE F., ŞİMŞEK Ş.  
9th International Conference on Magnetic and Superconducting Materials (MSM15), Antalya, Turkey, 30 April - 03 May 2015
- XXII. **SbSI based photonic crystal superlattices: Band structure and optics**  
ŞİMŞEK Ş., Koc H., Palaz S., Oltulu O., Mamedov A. M., Ozbay E.  
12th Russia/CIS/Baltic/Japan Symposium on Ferroelectricity, RCBJSF 2014 and 9th International Conference on Functional Materials and Nanotechnologies, FM and NT 2014, Riga, Latvia, 29 September - 02 October 2014, vol.77

- XXIII. **Dynamic Nonlinear Optical Processes in Some Oxygen Octahedra Ferroelectrics First Principle Calculations**  
ŞİMŞEK Ş., MAMEDOV A. M., ÖZBAY E.  
Joint 12th Russia/CIS/Baltic/Japan Symposium on Ferroelectricity and 9th International Conference Functional Materials and Nanotechnologies, Riga, Latvia, 29 September - 02 October 2014
- XXIV. **Band Gap and Optical Transmission in the Fibonacci Type One Dimensional A<sub>5</sub>B<sub>6</sub>C<sub>7</sub> Based Photonic Crystals**  
ŞİMŞEK Ş., KOÇ H., PALAZ S., OLTULU O., MAMEDOV A. M., ÖZBAY E.  
19th International Conference on Ternary and Multinary Compounds (ICTMC-19), Niigata, Japan, 1 - 05 September 2014
- XXV. **Band Structure and Optical Properties of the A<sub>4</sub>B<sub>6</sub> Layered Ferroelectrics ab initio calculations**  
KOÇ H., ŞİMŞEK Ş., PALAZ S., OLTULU O., MAMEDOV A. M., ÖZBAY E.  
19th International Conference on Ternary and Multinary Compounds (ICTMC-19), Niigata, Japan, 1 - 05 September 2014
- XXVI. **Linear and non linear optical properties of AgBO<sub>3</sub> B Nb Ta First principle study**  
ŞİMŞEK Ş., MAMEDOV A. M., ÖZBAY E.  
2013 Joint IEEE International Symposium on Applications of Ferroelectric and Workshop on Piezoresponse Force Microscopy (ISAF/PFM), Prague, Czech Republic, 21 - 25 July 2013, pp.45-48
- XXVII. **One and two dimensional LiNbO<sub>3</sub> photonic crystals**  
ŞİMŞEK Ş., MAMEDOV A. M., ÖZBAY E.  
2013 Joint IEEE International Symposium on Applications of Ferroelectric and Workshop on Piezoresponse Force Microscopy (ISAF/PFM), Prague, Czech Republic, 21 - 25 July 2013, pp.49-52
- XXVIII. **TWO DIMENSIONAL FERROELECTRIC PHOTONIC CRYSTAL OPTICS AND BAND STRUCTURE**  
ŞİMŞEK Ş., MAMEDOV A. M.  
ISAF-ECAPD-PFM 2012 Conference, Aveiro, Portugal, 9 - 13 July 2012
- XXIX. **İlk ilke yöntemiyle NaTaO<sub>3</sub> kristalinin elektronik ve dinamik özelliklerinin incelenmesi Yoğunluk fonksiyoneli teorisinin uygulaması**  
ŞİMŞEK Ş., ÇABUK S.  
18. Yoğun Madde Fiziği – Ankara Toplantısı, Ankara, Turkey, 25 November 2011
- XXX. **Oda sıcaklığında AgTaO<sub>3</sub> kristalinin elektronik ve dinamik özelliklerinin incelenmesi Ab initio hesabı**  
ŞİMŞEK Ş., ÇABUK S.  
18. Yoğun Madde Fiziği – Ankara Toplantısı, Ankara, Turkey, 25 November 2011
- XXXI. **Electronic Linear and Nonlinear Optical Properties of LiTaO<sub>3</sub> First Principles Calculations**  
ŞİMŞEK Ş., ÇABUK S.  
2 nd International Meeting on Materials for Electronic Applications (IMMEA-2009), Hammamet, Tunisia, 8 - 10 May 2009
- XXXII. **İlk Prensipten Yöntemiyle AgNbO<sub>3</sub> Kristalinin Elektronik ve Optik Özelliklerinin İncelenmesi**  
ŞİMŞEK Ş., ÇABUK S.  
24 th International Physics Congress-Malatya, Malatya, Turkey, 28 - 31 August 2007

## Metrics

Publication: 58

Citation (Scopus): 78

H-Index (WoS): 1

H-Index (Scopus): 6