

Assoc. Prof. SEZGİN AYDIN

Personal Information

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Education Information

Doctorate, Gazi University, Fen Bilimleri Enstitüsü, Fizik (Dr), Turkey 2004 - 2010

Postgraduate, Gazi University, Fen Bilimleri Enstitüsü, Fizik (YI) (Tezli), Turkey 2002 - 2004

Undergraduate, Gazi University, Fen Fakültesi, Fizik Bölümü, Turkey 1995 - 2002

Dissertations

Doctorate, Bor tabanlı kristal yapıların fiziksel özellikleri, Gazi University, Fen Bilimleri Enstitüsü, Fizik (Dr), 2010

Postgraduate, Duffing denklemi, Gazi University, Fen Bilimleri Enstitüsü, Fizik (YI) (Tezli), 2004

Research Areas

Atomic and Molecular Physics, Theory of Atoms and Molecules, Atomic and Molecular Interactions, Interdisciplinary Physics and Related Science and Technology Areas, Physical Chemistry, Materials Science, Condensed Matter 1: Structural, Mechanical and Thermal Properties, Intensive Article 2: Electronic Structure, Electric, Magnetic and Optical Properties

Academic Titles / Tasks

Associate Professor, Gazi University, Fen Fakültesi, Fizik Bölümü, 2015 - Continues

Research Assistant, Gazi University, Fen Fakültesi, Fizik Bölümü, 2006 - 2014

Courses

GENEL FİZİK II (ELEKTRİK VE MAGNETİZMA), Undergraduate, 2016 - 2017, 2017 - 2018

GENEL FİZİK I (MEKANİK), Undergraduate, 2016 - 2017, 2017 - 2018

KUANTUM FİZİK LAB., Undergraduate, 2016 - 2017

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

- I. **Mechanical and dynamic properties of stable two-dimensional boron-substituted ThMoB₄-type graphene: First-Principles Study**
Aydın S., Çiftçi Y.
MATERIALS TODAY COMMUNICATIONS, vol.27, 2021 (Journal Indexed in SCI)
- II. **Enhanced hydrogen storage of a functional material: Hf₂CF₂ MXene with Li decoration**
Gencer A., AYDIN S., Surucu O., Wang X., DELİGÖZ E., SÜRÜCÜ G.

APPLIED SURFACE SCIENCE, vol.551, 2021 (Journal Indexed in SCI)

- III. **Pressure-induced magnetic phase transitions of intermetallic Fe₂AlB₂**
AYDIN S., Simsek M.
JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS, vol.502, 2020 (Journal Indexed in SCI)
- IV. **Effect of boron substitution on hydrogen storage in Ca/DCV graphene: A first-principle study**
Eroglu E., AYDIN S., Simsek M.
INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, vol.44, no.50, pp.27511-27528, 2019 (Journal Indexed in SCI)
- V. **The enhancement of hydrogen storage capacity in Li, Na and Mg-decorated BC₃ graphene by CLICH and RICH algorithms**
AYDIN S., Simsek M.
INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, vol.44, no.14, pp.7354-7370, 2019 (Journal Indexed in SCI)
- VI. **Stability and superconductivity properties of metal substituted aluminum diborides (M_{0.5}Al_{0.5}B₂)**
AYDIN S., Simsek M.
COMPUTATIONAL MATERIALS SCIENCE, vol.154, pp.234-242, 2018 (Journal Indexed in SCI)
- VII. **First-principles hydrogen adsorption properties of Li-decorated ThMoB₄-type graphene**
Alp İ., AYDIN S., ÇİFTÇİ Y.
INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, vol.43, no.33, pp.16117-16127, 2018 (Journal Indexed in SCI)
- VIII. **Stability and Pressure Dependent Properties of Ternary Lithium Borides of Gold and Silver**
AYDIN S., Simsek M.
PHYSICA STATUS SOLIDI B-BASIC SOLID STATE PHYSICS, vol.255, no.6, 2018 (Journal Indexed in SCI)
- IX. **A superconducting battery material: Lithium gold boride (LiAu₃B)**
AYDIN S., Simsek M.
SOLID STATE COMMUNICATIONS, vol.272, pp.8-11, 2018 (Journal Indexed in SCI)
- X. **Changing of the structural, electronic and mechanical properties of lithium boron carbide (LiBC) with pressure**
AYDIN S.
JOURNAL OF THE FACULTY OF ENGINEERING AND ARCHITECTURE OF GAZI UNIVERSITY, vol.33, no.1, pp.1-12, 2018 (Journal Indexed in SCI)
- XI. **The structural, mechanical, and electronic properties of LiAlB₄ under pressure from first principles**
TAYRAN C., AYDIN S.
PHYSICA STATUS SOLIDI C: CURRENT TOPICS IN SOLID STATE PHYSICS, VOL 14 NO 5, vol.14, no.5, 2017 (Journal Indexed in SCI)
- XII. **Alkali and Alkaline earth metal doped aluminum tetraborides containing intrinsic planar boron sheet: XAlB₄ (X = Li, Mg, Ca, and Na)**
TAYRAN C., AYDIN S., ÇAKMAK M., Ellialtıoglu S.
COMPUTATIONAL MATERIALS SCIENCE, vol.124, pp.130-141, 2016 (Journal Indexed in SCI)
- XIII. **The Structural, Elastic, Electronic, Thermodynamic and Vibrational Properties of Protactinium Monocarbide (PaC) from First-Principles Calculations**
Ciftci Y., Coban C., AYDIN S., Tatar A., Evecen M.
JOURNAL OF NANOELECTRONICS AND OPTOELECTRONICS, vol.11, no.4, pp.506-513, 2016 (Journal Indexed in SCI)
- XIV. **Effect of pressure on structural, electronic, mechanical and optical properties of ruthenium diboride with oP(12)-type structure**
AYDIN S., Ciftci Y., Mogulkoc Y., Tatar A.
INDIAN JOURNAL OF PHYSICS, vol.90, no.7, pp.767-779, 2016 (Journal Indexed in SCI)
- XV. **Structural and electronic properties of AB- and AA-stacking bilayer-graphene intercalated by Li, Na, Ca, B, Al, Si, Ge, Ag, and Au atoms**
TAYRAN C., AYDIN S., ÇAKMAK M., Ellialtıoglu S.
SOLID STATE COMMUNICATIONS, vol.231, pp.57-63, 2016 (Journal Indexed in SCI)
- XVI. **Some new members of MAX family including light-elements: Nanolayered Hf₂XY (X= Al, Si, P and Y=B, C, N)**

- AYDIN S., Tatar A., ÇİFTÇİ Y.
SOLID STATE SCIENCES, vol.53, pp.44-55, 2016 (Journal Indexed in SCI)
- XVII. Site-different structures from dilithium hexaboride (Li₂B₆) to dimagnesium hexaboride (Mg₂B₆) by first-principles**
AYDIN S.
JOURNAL OF ALLOYS AND COMPOUNDS, vol.569, pp.118-125, 2013 (Journal Indexed in SCI)
- XVIII. The elastic and mechanical properties of MB₁₂ (M = Zr, Hf, Y, Lu) as a function of pressure**
Korozlu N., Colakoglu K., DELİGÖZ E., AYDIN S.
JOURNAL OF ALLOYS AND COMPOUNDS, vol.546, pp.157-164, 2013 (Journal Indexed in SCI)
- XIX. First-principles study of hypothetical boron crystals: B-n (n=13, 14, 15)**
AYDIN S., Simsek M.
SOLID STATE SCIENCES, vol.14, pp.1636-1642, 2012 (Journal Indexed in SCI)
- XX. A theoretical study for thorium monocarbide (ThC)**
AYDIN S., Tatar A., Ciftci Y.
JOURNAL OF NUCLEAR MATERIALS, vol.429, pp.55-69, 2012 (Journal Indexed in SCI)
- XXI. Pressure-dependent properties of a multifunctional material: Lithium platinum boride (LiPt₃B)**
AYDIN S., Simsek M.
PHYSICA STATUS SOLIDI B-BASIC SOLID STATE PHYSICS, vol.249, no.9, pp.1744-1755, 2012 (Journal Indexed in SCI)
- XXII. Superhard transition metal tetranitrides: XN₄ (X=Re, Os, W)**
AYDIN S., ÇİFTÇİ Y., Tatar A.
JOURNAL OF MATERIALS RESEARCH, vol.27, no.13, pp.1705-1715, 2012 (Journal Indexed in SCI)
- XXIII. First-principles study of thiophene on beta-SiC (001)-(2 x 1) surface**
Simsek M., AYDIN S.
PHYSICA B-CONDENSED MATTER, vol.406, no.14, pp.2880-2884, 2011 (Journal Indexed in SCI)
- XXIV. The structural, elastic and thermodynamic properties of thorium tetraboride**
AYDIN S., Tatar A.
SOLID STATE COMMUNICATIONS, vol.151, no.8, pp.628-633, 2011 (Journal Indexed in SCI)
- XXV. First-principles calculations of elemental crystalline boron phases under high pressure: Orthorhombic B-28 and tetragonal B-48**
AYDIN S., Simsek M.
JOURNAL OF ALLOYS AND COMPOUNDS, vol.509, no.17, pp.5219-5229, 2011 (Journal Indexed in SCI)
- XXVI. The Mechanical Properties of CaX₆ (X = B and C)**
AYDIN S., Simsek M.
NONLINEAR AND COMPLEX DYNAMICS: APPLICATIONS IN PHYSICAL, BIOLOGICAL, AND FINANCIAL SYSTEMS, pp.127-133, 2011 (Journal Indexed in SCI)
- XXVII. The investigation of hardness and bonding behavior in XB₄, X = {Ce, Th, U, Pa}, tetraborides by first-principles**
AYDIN S., ÖZCAN A.
Turkish Journal of Physics, vol.34, no.1, pp.1-12, 2010 (Journal Indexed in SCI Expanded)
- XXVIII. The structural, mechanical and electronic properties of LiX₆ (X=C, B): a first principle study**
Tatar A., AYDIN S.
OPTOELECTRONICS AND ADVANCED MATERIALS-RAPID COMMUNICATIONS, vol.4, no.9, pp.1329-1331, 2010 (Journal Indexed in SCI)
- XXIX. Thermodynamic properties of UB₆ under high temperature and pressure**
Tatar A., AYDIN S.
OPTOELECTRONICS AND ADVANCED MATERIALS-RAPID COMMUNICATIONS, vol.4, no.9, pp.1342-1345, 2010 (Journal Indexed in SCI)
- XXX. First-principles calculations of MnB₂, TcB₂, and ReB₂ within the ReB₂-type structure**
AYDIN S., Simsek M.
PHYSICAL REVIEW B, vol.80, no.13, 2009 (Journal Indexed in SCI)

- XXXI. **Hypothetically superhard boron carbide structures with a B₁₁C icosahedron and three-atom chain**
AYDIN S., Simsek M.
PHYSICA STATUS SOLIDI B-BASIC SOLID STATE PHYSICS, vol.246, no.1, pp.62-70, 2009 (Journal Indexed in SCI)

Articles Published in Other Journals

- I. **Stability of intrinsic and extrinsic co-decorated boron sheets with Li and Mg**
Eroglu E., AYDIN S., Simsek M.
COMPUTATIONAL CONDENSED MATTER, vol.17, 2018 (Journal Indexed in ESCI)
- II. **First-principles stability investigation of XBC (X=Li, Na, Mg ve Ca) compounds with graphene-like planar boron-carbide layer**
AYDIN S.
JOURNAL OF POLYTECHNIC-POLITEKNİK DERGISI, vol.18, no.4, pp.197-201, 2015 (Journal Indexed in ESCI)
- III. **First-Principles Study of Ta₃B₄-type TiX₂B₄ (X=Li, Na, Mg ve Ca) Compounds**
AYDIN S.
JOURNAL OF POLYTECHNIC-POLITEKNİK DERGISI, vol.18, no.3, pp.133-139, 2015 (Journal Indexed in ESCI)
- IV. **Spin-Polarized Ground State Properties of Cr₂AlX (X=C, N and B) Ceramics**
AYDIN S.
GAZI UNIVERSITY JOURNAL OF SCIENCE, vol.28, no.2, pp.185-193, 2015 (Journal Indexed in ESCI)
- V. **The investigation of hardness and bonding behavior inXB₄ X Ce Th U Pa tetraborides by first principles**
AYDIN S., ÖZCAN A.
TURKISH JOURNAL OF PHYSICS, 2009 (Other Refereed National Journals)

Refereed Congress / Symposium Publications in Proceedings

- I. **Ag Dekore Edilmiş ThMoB₄ Tipi Grafen Allotropunun Hidrojen Depolama Özelliklerinin İlk İlkeler Yöntemi İle İncelenmesi**
ALP İ., ÇİFTÇİ Y., AYDIN S.
22. Yoğun Madde Fiziği Ankara Toplantısı, Ankara, Turkey, 16 December 2016
- II. **Hydrogen adsorption on lithium and beryllium decorated planar ThMoB₄ type graphene allotrope**
ALP İ., AYDIN S., ÇİFTÇİ Y.
European Advanced Materials Congress 2016, Stockholm, Sweden, 23 - 25 August 2016
- III. **Hydrogen adsorption geometries on magnesium decorated planar ThMoB₄ type graphene allotrope: A first principles study**
ALP İ., AYDIN S., ÇİFTÇİ Y.
European Advanced Materials Congress 2016, Stockholm, Sweden, 23 - 25 August 2016
- IV. **Hydrogen storage on nano level optimized pentaheptite graphene allotrope with sodium decoration**
ALP İ., AYDIN S., ÇİFTÇİ Y.
12th Nanoscience and Nanotechnology Conference, Kocaeli, Turkey, 3 - 05 June 2016
- V. **Hydrogen adsorption on Ca decorated hexagonal planar carbon pentaheptite**
ALP İ., ÇİFTÇİ Y., AYDIN S.
12th Nanoscience and Nanotechnology Conference, Kocaeli, Turkey, 3 - 05 June 2016
- VI. **Structural mechanical and electronic properties of XAlB₄ X Li N Ca and Na**
TAYRAN C., AYDIN S., ÇAKMAK M., ELLİALTIOĞLU S. Ş.
9th International Physics Conference of the Balkan Physical Union, 24 - 27 August 2015
- VII. **Structural, Mechanical, and Electronic Properties of XAlB₄ (X=Li, Mg, Ca, and Na)**
TAYRAN C., AYDIN S., ÇAKMAK M., ELLİALTIOĞLU S. Ş.
9th International Physics Conference of the Balkan Physical Union (BPU9), Turkey, 24 - 27 August 2015

- VIII. **First-Principles Study of Layer-Intercalated Trilayer Graphene**
TAYRAN C., AYDIN S., ÇAKMAK M., ELLİALTIOĞLU S. Ş.
11th Nanoscience and Nanotechnology Conference (NanoTR-11), Turkey, 22 - 25 June 2015
- IX. **Li-Katkılı Üç-Tabakalı Grafen Sistemlerinin Yapısal ve Elektronik Özellikleri**
TAYRAN C., AYDIN S., ÇAKMAK M., ELLİALTIOĞLU S. Ş.
20. Yoğun Madde Fiziği Ankara Toplantısı, Turkey, 26 December 2014
- X. **The Structural and Electronic Properties of X (Li, Ag, Au)-Intercalated AB Stacking Bilayer-Graphene**
TAYRAN C., AYDIN S., ÇAKMAK M., ELLİALTIOĞLU S. Ş.
30th European Conference on Surface Science (ECOSS-30), Turkey, 31 August - 05 September 2014
- XI. **Structural and Electronic Properties of Li-Intercalated AA-Stacking Bilayer-Graphene: A First-Principles Study**
TAYRAN C., AYDIN S., ÇAKMAK M., ELLİALTIOĞLU S. Ş.
Turkish Physical Society 31st International Physical Congress, Turkey, 21 - 24 July 2014
- XII. **X(=Li, Na, Ca, B, Al, Si, Ge, Ag, Au)-Intercalated AA-Stacking Bilayer-Graphene**
TAYRAN C., AYDIN S., ÇAKMAK M., ELLİALTIOĞLU S. Ş.
Turkish Physical Society 31st International Physical Congress, Turkey, 21 - 24 July 2014

Citations

Total Citations (WOS):405

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