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### Education Information

Yildiz Technical University, Fen Edebiyat Fakültesi, Fizik, Turkey Continues

### Research Areas

Physics, General Physics, Statistical physics, thermodynamic and nonlinear dynamic systems, Condensed Matter 1: Structural, Mechanical and Thermal Properties, Thermal Properties of Condensed Matter, Natural Sciences

### Academic Titles / Tasks

Research Assistant, Yildiz Technical University, Faculty Of Arts & Science, Department Of Physics, 1998 - Continues

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

- I. **Molecular dynamics modelling of the stress–strain response of  $\beta$ -sheet nanocrystals**  
TAŞSEVEN Ç., AKDERE Ü., GÜNAY S. D., AKSAKAL B.  
Computational Materials Science, vol.246, 2025 (SCI-Expanded)
- II. **Molecular dynamics and integral equation study of the structure and dynamics of solid and liquid magnesium phosphide**  
Aydin Y., GÜNAY S. D., AKDERE Ü., TAŞSEVEN Ç.  
Molecular Simulation, 2023 (SCI-Expanded)
- III. **Insight into the structural, thermal and ion transport properties of solid and liquid Mg<sub>3</sub>N<sub>2</sub>: a model potential and NPT molecular dynamics simulation**  
Aydin Y., Gunay S. D., AKDERE Ü., TAŞSEVEN Ç.  
MOLECULAR SIMULATION, vol.48, no.7, pp.602-609, 2022 (SCI-Expanded)
- IV. **Influence of repeating sequence on structural and thermal stability of crystalline domain of bombyx mori silk fibroin**  
Aksakal B., Akdere Ü., Günay S. D., Çağın T., Taşseven Ç.  
MATERIALS RESEARCH EXPRESS, vol.6, no.12, 2019 (SCI-Expanded)
- V. **Ordering and diffusion in liquid magnesium antimonide (Mg<sub>3</sub>Sb<sub>2</sub>) from hypernetted-chain theory and molecular dynamics simulation**  
AKDERE Ü., GÜNAY S. D., TAŞSEVEN Ç.  
Ionics, vol.25, no.6, pp.2711-2717, 2019 (SCI-Expanded)
- VI. **Thermal expansion and heat capacities of AgBr and AgCl at solid and liquid phases from molecular**

### **dynamics simulation**

Akdere U.

International Journal of Modern Physics B, vol.29, no.14, 2015 (SCI-Expanded)

- VII. **Hypernetted chain calculations of molten uranium dioxide: Comparison of rigid ion potentials**  
GÜNAY S. D., AKDERE Ü., TAŞSEVEN Ç.  
JOURNAL OF MOLECULAR LIQUIDS, vol.173, pp.124-129, 2012 (SCI-Expanded)
- VIII. **THERMOPHYSICAL PROPERTIES OF URANIUM DIOXIDE: A MOLECULAR DYNAMICS STUDY OF SOLID AND LIQUID PHASES OF STOICHIOMETRIC UO<sub>2</sub>**  
GÜNAY S. D., KAVANOZ H. B., AKDERE Ü., TAŞSEVEN Ç.  
INTERNATIONAL JOURNAL OF MODERN PHYSICS B, vol.25, pp.3211-3223, 2011 (SCI-Expanded)
- IX. **MOLECULAR DYNAMICS SIMULATION OF UO<sub>2</sub>: AN ALTERNATIVE RIGID ION MODEL POTENTIAL**  
GÜNAY S. D., AKDERE Ü., KAVANOZ H. B., TAŞSEVEN Ç.  
INTERNATIONAL JOURNAL OF MODERN PHYSICS B, vol.25, no.9, pp.1201-1210, 2011 (SCI-Expanded)
- X. **Freezing in halide salts**  
AKDERE Ü., Yılmaz M., Kavanoz H. B., Taşseven Ç.  
ACTA PHYSICA POLONICA A, vol.113, no.6, pp.1659-1670, 2008 (SCI-Expanded)

### **Articles Published in Other Journals**

- I. **Thermophysical Properties of Anti-Parallel  $\beta$ -Sheets with Bombyx mori Silk Nanostructures [Gly-Ser-Gly-Ala-Gly-Ala]<sub>n</sub> and [Gly-Ala]<sub>n</sub>**  
Aksakal B., Günay S. D., Akdere Ü., Çağın T., Taşseven Ç.  
materials science forum, vol.856, pp.70-73, 2016 (Scopus)
- II. **Thermomechanical properties of anti-parallel  $\beta$ -sheets with Bombyx mori silk nano structures [Gly-Ser-Gly-Ala-Gly-Ala]<sub>n</sub> and [Gly-Ala]<sub>n</sub>**  
Akdere Ü., Aksakal B., Günay S. D., Taşseven Ç., Çağın T.  
Materials Science Forum, vol.851, pp.74-77, 2016 (Scopus)
- III. **Classical Molecular Dynamics Simulation of Mg<sub>3</sub>Bi<sub>2</sub> at Solid and Liquid Phase**  
GÜNAY S. D., Kayadibi F., Akdere Ü., Taşseven Ç.  
Balkan Physics Letters, vol.15, pp.151013, 2009 (Peer-Reviewed Journal)
- IV. **The Structure and Ionic Transport of Liquid Semiconductor NiTe**  
Akdere Ü., Günay S. D., Kavanoz H. B., Taşseven Ç.  
Balkan Physics Letters, vol.15, pp.1-7, 2009 (Peer-Reviewed Journal)

### **Papers Published in Refereed Scientific Meetings**

- I. **THERMOPHYSICAL PROPERTIES OF NANO-CRYSTALLITE MAGNESIUM NITRIDE VIA MOLECULAR DYNAMICS SIMULATION AT CONSTANT PRESSURE**  
Aydın Y., Akdere Ü., Günay S. D., Taşseven Ç.  
TURKISH PHYSICAL SOCIETY 35 INTERNATIONAL PHYSICS CONGRESS, Muğla, Turkey, 4 - 08 September 2019, pp.351
- II. **NVE SIMULATION AND HYPERNETTED-CHAIN CALCULATION OF THE SUPERIONIC CONDUCTOR LITHIUM NITRIDE**  
Akdere Ü., Günay S. D.  
TURKISH PHYSICAL SOCIETY 35 INTERNATIONAL PHYSICS CONGRESS, Muğla, Turkey, 4 - 08 September 2019, pp.207
- III. **INTERACTION POTENTIAL AND LOCAL STRUCTURE OF LIQUID MAGNESIUM NITRIDE VIA HYPERNETTED-CHAIN THEORY**  
Aydın Y., Akdere Ü., Günay S. D., Taşseven Ç.

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- IV. **Static Structure and Ionic Diffusion of Liquid Magnesium Nitrate**  
AKDERE Ü., Aydın Y., GÜNAY S. D., TAŞSEVEN Ç.  
ICSEEC: SUSTAINABLE ENERGY AND ENERGY CALCULATIONS, Muğla, Turkey, 12 April 2019, pp.49
- V. **Simulation of Pullout Test on Crystallite Segment of Antiparallel beta-Sheets of Bombyx Mori Silk Fibroin**  
Uğuz C., AKDERE Ü., GÜNAY S. D., TAŞSEVEN Ç.  
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- VI. **Hydrogen Bond Analysis of Bombyx Mori Silk Fibroin by MD Simulation at Room Temperature**  
Akdere Ü., Günay S. D., Taşseven Ç.  
Turkish Physical Society 34 International Physics Congress, Muğla, Turkey, 5 - 09 September 2018, pp.474
- VII. **Simulations of Mechanical Properties of Crystalline Units of Bombyx Mori Silkworm Silk**  
Akdere Ü., Uğuz C.  
Turkish Physical Society 34 International Physics Congress, Muğla, Turkey, 5 - 09 September 2018, pp.297
- VIII. **Hydrogen Bond Analysis of Bombyx Mori Silk Fibroin by MD Simulation at Room Temperature**  
AKDERE Ü., GÜNAY S. D., TAŞSEVEN Ç.  
Turkish Physical Society 34rd International Physics Congress, 5 - 09 September 2018
- IX. **Structural phase transition of Mg3As2**  
AKDERE Ü., GÜNAY S. D., TAŞSEVEN Ç.  
Turkish Physical Society 33rd International Physics Congress, Muğla, Turkey, 6 - 10 September 2017
- X. **Temperature dependence of mechanical properties of anti-parallel beta sheets with bombyx-mori silk nano structures along chain direction**  
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Turkish Physical Society 33rd International Physics Congress, Muğla, Turkey, 6 - 10 September 2017
- XI. **Polar/Antipolar - Antiparallel beta sheets of bombyx mori silk nano crystallites solvated in different type of water**  
Uğuz C., TAŞSEVEN Ç., GÜNAY S. D., AKDERE Ü.  
JAPMED 10, İzmir, Turkey, 4 - 08 July 2017
- XII. **Low- and high- temperature structural analysis of magnesium antimonide**  
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1st International Conference on Energy and Thermal Engineering, ICTE 2017, İstanbul, Turkey, 25 - 28 April 2017
- XIII. **Analysis of Mechanical Behavior of Anti Parallel Beta Sheets with Bombyx Mori Silk Nano Structures Along Inter Sheet Direction**  
Akdere Ü., Günay S. D., Aksakal B., Çağın T., Taşseven Ç.  
Turkish Physical Society 32th International Physics Conference, Muğla, Turkey, 6 - 09 September 2016
- XIV. **Thermomechanical properties of anti parallel sheets with Bombyx mori silk nano structures Gly Ser Gly Ala Gly Ala n and Gly Ala n**  
Günay S. D., Akdere Ü., Aksakal B., Çağın T., Taşseven Ç.  
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- XV. **Thermophysical properties of anti parallel sheets with Bombyx mori silk nano structures Gly Ser Gly Ala Gly Ala n and Gly Ala n**  
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- XVI. **Thermophysical Properties of alpha-Pu2O3: A New Potential Model**  
GÜNAY Ş., Akgenc B., AKDERE Ü., TAŞSEVEN Ç.  
3rd International Congress on Advances in Applied Physics and Materials Science, Antalya, Turkey, 24 - 28 April

2013, vol.1569, pp.208-211

- XVII. **NPT simulation and hypernetted-chain calculations of SrCl<sub>2</sub>**  
Akgeç B., AKDERE Ü., GÜNAY Ş., TAŞSEVEN Ç.  
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- XVIII. **Thermophysical Properties of AgBr and AgCl from Molecular Dynamics Simulation**  
Akdere Ü., Günay S. D., Taşseven Ç.  
Turkish Physical Society 29 International Physics Congress, Muğla, Turkey, 5 - 08 September 2012, pp.524
- XIX. **Liquid State Theory of Plutonium Dioxide: Hypernetted Chain Approximation**  
Akdere Ü., Akgeç B., Taşseven Ç., Günay S. D.  
Turkish Physical Society 29 International Physics Congress, Muğla, Turkey, 5 - 08 September 2012, pp.628
- XX. **A Study of Low Temperature Thermal Expansion and Structural Behaviour of Stromeyerite AgCuS**  
Akdere Ü., Öztekin H. Ö., Yılmaz M., Kavanoz H. B.  
Turkish Physical Society 29 International Physics Congress, Muğla, Turkey, 5 - 08 September 2012, pp.655
- XXI. **Temperature Dependence of Ionic Diffusion of Thorium Dioxide**  
Akdere Ü., Akgeç B., Günay S. D., Taşseven Ç.  
Turkish Physical Society 29 International Physics Congress, Muğla, Turkey, 5 - 08 September 2012, pp.156
- XXII. **Studying Superionic Phase Transition of Plutonium Dioxide From Molecular Dynamics Simulation**  
Akdere Ü., Günay S. D., Akgeç B., Taşseven Ç.  
Turkish Physical Society 29 International Physics Congress, Muğla, Turkey, 5 - 08 September 2012, pp.578
- XXIII. **Thermophysical Properties of Liquid Thallium Halides (TlBr, TlCl, TlI) from Hypernetted Chain Theory**  
Akdere Ü., Yılmaz M., Kavanoz H. B., Öztekin H. Ö.  
Turkish Physical Society 28 International Physics Congress, Muğla, Turkey, 6 - 09 September 2011, pp.825
- XXIV. **Hypernetted Chain Theory of Liquid GeO<sub>2</sub>: Preliminary Results**  
Akdere Ü., Günay S. D., Taşseven Ç.  
Turkish Physical Society 28 International Physics Congress, Muğla, Turkey, 6 - 09 September 2011, pp.648
- XXV. **HNC Calculations of Thermodynamic Properties of Molten AgI**  
Günay S. D., Çalışkan M., Akdere Ü., Taşseven Ç.  
Turkish Physical Society 28th International Physics Conference, 6 - 09 September 2011
- XXVI. **Molecular dynamics simulation of thermal properties of Ag<sub>3</sub>SI**  
Öztekin H., KAVANOZ H. B., AKDERE Ü., YILMAZ M., Taşseven Ç.  
7th International Conference of the Balkan Physical Union, Alexandroupoli, Greece, 9 - 13 September 2009, vol.1203, pp.252-254
- XXVII. **Classical Molecular Dynamics Simulation of Mg<sub>3</sub>Bi<sub>2</sub> at Solid and Liquid Phase**  
Akdere Ü., Kayadibi F., Günay S. D., Taşseven Ç.  
Turkish Physical Society 25th International Physics Congress, Muğla, Turkey, 25 - 29 August 2008, pp.176
- XXVIII. **Static Structure and Ionic Transport in Molten NiTe and NiTe<sub>2</sub>**  
GÜNAY S. D., Akdere Ü., Taşseven Ç.  
Turkish Physical Society 25th International Physics Conference, 25 - 29 August 2008
- XXIX. **The structure and transport properties of β-Mg<sub>3</sub>Bi<sub>2</sub> in superionic conduction and molten phase**  
AKDERE Ü., GÜNAY Ş.  
6TH International Conference of the Balkan Physical Union, İstanbul, Turkey, 22 August 2006 - 26 August 2007, vol.899, pp.577
- XXX. **Transport properties of uranium dioxide by molecular dynamics simulation**  
Günay S. D., Akdere Ü., Kavanoz B., Taşseven Ç.  
International Conference on Computational Methods in Science and Engineering, Corfu, Greece, 25 - 30 September 2007, vol.2, pp.1212-1215
- XXXI. **The Static Structure of Liquid Semiconductors NiTe and NiTe<sub>2</sub> Preliminary Results**  
GÜNAY S. D., AKDERE Ü., KOSAVALI F., TAŞSEVEN Ç.  
AIP Conference Proceedings, 22 - 26 August 2006, vol.899, pp.616

- XXXII. **Equilibrium Molecular Dynamics Calculations of The Transport Properties of Molten Thallium Halides**  
GÜNAY S. D., AKDERE Ü., KOSAVALI F., TAŞSEVEN Ç.  
AIP Conference Proceedings, 22 - 26 August 2006, vol.899, pp.605
- XXXIII. **Hypernetted Chain Theory and Molecular Dynamic Simulation of Static Structure and Ionic Transport in Molten UO<sub>2</sub> and UCl<sub>3</sub>**  
Günay S. D., Akdere Ü., Kavanoz H. B., Yılmaz M., Taşseven Ç.  
Turkish Physical Society 23th Conference, Muğla, Turkey, 13 - 16 September 2005
- XXXIV. **Static Criteria for Freezing of Liquid Halide Salts**  
Akdere Ü., Yılmaz M., Kavanoz H. B., Taşseven Ç.  
Turkish Physical Society 23 International Physics Congress, Muğla, Turkey, 13 - 16 September 2005, pp.641
- XXXV. **The Static and Thermodynamic Properties of Molten UO<sub>2</sub> and UCl<sub>3</sub> (Preliminary Results)**  
Akdere Ü., Taşseven Ç., Kavanoz H. B.  
The Fifth International Conference on Chemical Physics, İstanbul, Turkey, 31 October - 01 November 2002, pp.1-2

## Supported Projects

GÜNAY S. D., Aydın Y., AKDERE Ü., TAŞSEVEN Ç., Project Supported by Higher Education Institutions, Magnezyum-Azot Grubu Bileşiklerinin Bilgisayar Simülasyonu Yöntemleriyle Fiziksel Özelliklerinin İncelenmesi, 2018 - 2020  
Akdere Ü., TUBITAK Project, Thermo-mechanical Properties of Silk Fibroin Fibers from Molecular Dynamics Simulation for High Performance Applications, 2016 - 2018  
Akdere Ü., Taşseven Ç., GÜNAY S. D., Project Supported by Higher Education Institutions, Süperiyonik İletkenlerin Yüksek Sıcaklık Davranışları, 2003 - 2007

## Metrics

Publication: 55  
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