

## Institute of Physics

Chair of Condensed Matter Physics

Associate professor

## 📖 Publications

*Article*

### **Molecular simulation study of RNA/dopamine complex dynamics at varying concentrations**

Armen H. Poghosyan, Yevgeni S. Mamasakhlisov, Marine A. Parsadanyan, Mariam A. Shahinyan,

Zvart H. Movsisyan, Poghos O. Vardevanyan

Scientific Reports 2025 21379

*Article*

### **Thermodynamic and Magnetic Properties of Weakly Interacting Electron Gas Localized in a CdSe Cylindrical Core-Shell Quantum Dot**

Yevgeni Mamasakhlisov, Levon Tadevosyan, Hayk Ghaltaghchyan, Hayk Sarkisyan

Quantum Reports 2025 13

*Article*

### **Thermodynamic parameters of the electron gas in CdSe nanoplatelets**

Y.Sh. Mamasakhlisov, L.A. Tadevosyan, H.Ts. Ghaltaghchyan, V.A. Harutyunyan, H.A. Sarkisyan

Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment  
2025 170274

*Article*

### **Few-particle gas in strongly oblate asymmetric ellipsoidal quantum dot**

Y.Sh. Mamasakhlisov, A.A. Nahapetyan, M.A. Mkrtchyan, M.Ya. Vinnichenko, D.A. Firsov, H.A. Sarkisyan

Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment  
2025 170251

*Article*

### **Two-dimensional pair-interacting hole gas thermodynamics: Exactly solvable Moshinsky model for lens-shaped quantum dots**

Y.S. Mamasakhlisov, M.A. Mkrtchyan, D.B. Hayrapetyan, S. Baskoutas, H.A. Sarkisyan

Heliyon 2024 e34762

*Article*

### **Sequence disorder-induced first order phase transition in confined polyelectrolytes**

Y.Sh. Mamasakhlisov, V.F. Morozov, V. Stepanyan, A. Badasyan, R. Podgornik

Journal of Chemical Physics 2024 134906

*Article*

### **Pair-Interacting Heavy Holes Gas in a Strongly Prolate Ellipsoidal Quantum Dot: Thermodynamic Properties [Парно-взаимодействующий газ тяжелых дырок в сильно-**

**вытянутой эллипсоидальной квантовой точке: термодинамические свойства]**

Y. S. Mamasakhlisov, M. A. Mkrtchyan, H. A. Sarkisyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2023 391–396

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*Article*

**Computational Design of Gas Sensors Based on V3S4 Monolayer**

Hayk A. Zakaryan, Misha A. Aghamalyan, Yevgeni Sh. Mamasakhlisov, Ilya V. Chepkasov,

Ekaterina V. Sukhanova, Alexander G. Kvashnin, Anton M. Manakhov, Zakhar I Popov,

Dmitry G. Kvashnin

Nanomaterials 2022 774

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*Article*

**Adsorption of Hydrogen Peroxide on Two-Dimensional Transition Metal Chalcogenides**

M. A. Aghamalyan, V. M. Aroutiounian, E. S. Mamasakhlisov, E. V. Sukhanova, A. G. Kvashnin, Z. I. Popov,

A. A. Zakaryan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2022 170-173

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*Article*

**The mechanism of flip-flops in a AOT lamella: A molecular dynamics study**

Y. Sh. Mamasakhlisov, A.H. Poghosyan

Colloids and Surfaces A: Physicochemical and Engineering Aspects 2022 128681

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**Spectroscopic Study of Protein Complexes with Low-Molecular Compounds**

P.O. Vardevanyan, M.A. Shahinyan, N.H. Petrosyan, Y.Sh. Mamasakhlisov

Journal of Contemporary Physics (Armenian Academy of Sciences) 2021 60-64

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**A molecular dynamics study of protein denaturation induced by sulfonate-based surfactants**

Yevgeni S. Mamasakhlisov, Armen H. Poghosyan, Aram A. Shahinyan, Gayane R. Kirakosyan,

Naira M. Ayvazyan, Garegin A. Papoian

Journal of Molecular Modeling 2021 261

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*Article*

**Cold denaturation of RNA secondary structures with loop entropy and quenched disorder**

Yevgeni Mamasakhlisov, Flavio Iannelli, Roland R Netz

Physical Review E 2020 012502(1-14)

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**Statistical mechanics of DNA-nanotube adsorption**

Yevgeni Mamasakhlisov, Shushanik Tonoyan, Davit Khechoyan, Artem Badasyan

Physical Review E 2020 062422(1-5)

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**The Conductivity of the Monolayer of DNA - Quantum Dot Complexes in the Presence of Intercalating Charged Ligands**

Y.S. Mamasakhlisov, V.F. Morozov, S.A. Tonoyan, E.M. Kazaryan, A.Y. Mamasakhlisov

Journal of Contemporary Physics (Armenian Academy of Sciences) 2020 87-93

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Article

**The Rouse Model of Viscoelasticity and Diffusion Behavior of Chromatin**

Stepanyan V. A., Hayrapetyan A. A., Mamasakhlisov E.S

Journal of Contemporary Physics (Armenian Academy of Sciences) 2020 254-258

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Article

**Differential Melting Curves in Heterogeneous Biopolymers**

V. F. Morozov, A. Y. Mamasakhlisov, A. Asatryan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2020 259-264

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Article

**THE CONDUCTIVITY OF THE MONOLAYER OF COMPLEXES OF DNA WITH QUANTUM DOTS IN THE PRESENCE OF INTERCALATING LIGANDS**

Ye. Sh. MAMASAKHLISOV, A. Ye. MAMASAKHLISOV

Proceedings of the YSU A. Physical and Mathematical Sciences 2019 203-207

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Article

**The double-stranded DNA stability in presence of a flexible polymer**

Yevgeni Mamasakhlisov, Hakob Sngryan, Shushanik Tonoyan, Artur Hakobyan, Poghos Vardevanyan

Journal of Biomolecular Structure and Dynamics 2018 1-12

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Article

**Sensitivity of DNA Sensors in the Presence of Charged Ligands**

Sh.A. Tonoyan, A.A. Hakobyan, A.K. Andreassian, V.F. Morozov, Y.Sh. Mamasakhlisov

Journal of Contemporary Physics (Armenian Academy of Sciences) 2018 179-186

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Article

**Straight Calculations of Helix-Coil Transition Parameters in Heteropolymers**

A.V. Asatryan, A.K. Andriasyan, A.A. Hakobyan, Sh.A. Tonoyan, Y.Sh. Mamasakhlisov, V.F. Morozov

Proceedings of the YSU A. Physical and Mathematical Sciences 2018 47-54

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Article

**Переход порядок-беспорядок в гетерогенных биологических макромолекулах**

A.B. Асатрян, А.К. Андриясян, Ш.А. Тоноян, Е.Ш. Мамасахлисов, В.Ф. Морозов

Вестник Российско-Армянского Университета: Физико-математические и естественные науки 2018 41-54

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Article

**AN INTEGRATED WEB-BASED INTERACTIVE DATA PLATFORM FOR MOLECULAR DYNAMICS SIMULATIONS**

HRACHYA ASTSATRYAN, WAHI NARSISIAN, ELIZA GYULGYULYAN, VARDAN BAGHDASARYAN,

ARMEN POGHOSYAN, YEVGENI MAMASAKHLISOV, PETER WITTENBURG

Scalable Computing: Practice and Experience 2018 131-138

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Article

**Effect of ligands binding on the isotherm of hybridization of the DNA-chip**

H.L. Tsaturyan, Sh.A. Tonoyan, V.F. Morozov, Y.Sh. Mamasakhlisov

Journal of Contemporary Physics (Armenian Academy of Sciences) 2017 180-188

<http://www.springer.com/physics/particle+and+nuclear+physics/journal/11958>

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Article

**Fluctuations in order-disorder transitions in the DNA-ligand complexes with various binding mechanisms**

Y.Sh. Mamasakhlisov, A.P. Antonyan, A.Y. Mamasakhlisov, Sh.A. Tonoyan, P.H. Vardevanyan

Journal of Contemporary Physics (Armenian Academy of Sciences) 2017 173-179

<http://www.springer.com/physics/particle+and+nuclear+physics/journal/11958>

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Article

**On the Performance and Energy Consumption of Molecular Dynamics Applications for Heterogeneous CPU-GPU Platforms Based on Gromacs**

Armen Poghosyan, Hrachya Astsatryan, Wahi Narsisian, Yevgeni Mamasakhlisov

Cybernetics and Information Technologies 2017 68-80

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Article

**Possible mechanism of non-monotone behavior of helix-coil transition temperature in two-component solvent**

Sh.A. Tonoyan, A.V. Asatryan, D.L.Hayrapetyan, Y.Sh. Mamasakhlisov, V.F. Morozov

Journal of Contemporary Physics (Armenian Academy of Sciences) 2016 93-98

<http://www.springer.com/physics/particle+and+nuclear+physics/journal/11958>

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Article

**Theoretical treatment of helix-coil transition of complexes DNA with two different ligands having different binding parameters**

Armen T.Karapetian, Zareh A.Grigoryan, Yevgeni Sh.Mamasakhlisov, Mikael V.Minasyants,

Poghos O. Vardevanyan

Journal of Biomolecular Structure and Dynamics 2016 198-202

<http://www.tandfonline.com/action/journalInformation?journalCode=tbsd20#.V25anP...>

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Article

**Generalized model of polypeptide chain for helix-coil transition in two-component solvent**

Sh.A. Tonoyan, A.V. Asatryan, Mirtavoosi Saadat, Y.Sh. Mamasakhlisov, V.F. Morozov

Journal of Contemporary Physics (Armenian Academy of Sciences) 2015 375-380

<http://www.springer.com/physics/particle+and+nuclear+physics/journal/11958>

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Article

**Solvent effects in the helix-coil transition model can explain the unusual biophysics of intrinsically disordered proteins**

A. Badasyan, Y. Sh. Mamasakhlisov, R. Podgornik, V. A. Parsegian

Journal of Chemical Physics 2015 014102-1-014102-

<http://scitation.aip.org/content/aip/journal/jcp>

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Article

**Collapse and hybridization of RNA: View from replica technique approach**

Y.Sh. Mamasakhlisov, S. Bellucci, Shura Hayryan, H. Caturyan, Z. Grigoryan, Chin-Kun Hu

European Physical Journal E 2015 100

<http://epje.epj.org/>

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Article

**Differential Geometry in DNA Molecules**

Armen Nersessian, Yevgeni Mamasakhlisov, Stefano Bellucci

*Article*

**External field influence on semiflexible macromolecules: geometric coupling**

Armen Nersessian, Yevgeni Mamasakhlisov, Stefano Bellucci

Modern Physics Letters B 2011 1809-1819

<http://www.worldscientific.com/worldscinet/mplb>

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*Conference*

**The dsDNA duplex stability and carbon nanotube induced crystallization: the effect of two - component solvent**

Sh.A. Tonoyan, A.V. Asatryan, S. Mirtavoosi, Y.Sh. Mamasakhlisov, V.F. Morozov

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*Conference*

**Theoretical Description of ssDNA Adsorption on Carbon Nanotubes**

Shushanik Tonoyan, Davit Khechoyan, Vardges Mambreyan, Vladimir Morozov, Yevgeni Mamasakhlisov

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*Conference*

**Constrained Annealing Approach for Order-Disorder Transitions in heterogeneous Macromolecular Systems**

Shushanik Tonoyan, A. Andreassian, A. Hakobyan, V.F. Morozov, Y.Sh. Mamasakhlisov

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*Conference*

**The Helix-Coil Transition the Frames of GMPC. Ligands Effects**

Vladimir Morozov, Aram Andriasyan, Saadat Mirtavoosi, Shushanik Tonoyan, Yevgeni Mamasakhlisov

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*Conference*

**Reentrant Melting of Single - Stranded RNA with Quenched Sequence Randomness**

Yevgeni Mamasakhlisov, A. Andreassian, A. Hakobyan

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*Conference*

**Study of human serum albumin interaction with some ligands**

P. Vardevanyan, Y. Mamasakhlisov, M. Shahinyan, M. Mikaelyan, N. Petrosyan

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