

# Anna F Mkrtchyan

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Director

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## Education

Institution	SPC "Armbiotechnology" NAS RA
Faculty	SPC "Armbiotechnology" NAS RA
Date	2008 - 2012
Degree name	PhD student

Institution	Yerevan State University
Faculty	Faculty of Chemistry
Date	2003 - 2008
Degree name	Qualified specialist

## Language skills

Հայերեն Русский English

## Scientific interests

- asymmetric stoichiometric synthesis and catalysis

## State awards and honorary titles

2015 State Award

2019 Gold medal of the YSU

2023 commemorative medal of the prime minister

## Publications

Article

### Synthesis of enantiomerically enriched $\beta$ -N-amino (S)- $\alpha$ -alanine analogs via sequential reactions on a chiral Ni(ii) complex

Emma A. Khachatryan, Lala A. Stepanyan, Hasmik R. Gevorgyan, Armen S. Sargsyan,

Anahit M. Hovhannisyan, Anna F. Mkrtchyan, Andrei V. Malkov, Ashot S. Saghyan

Organic & Biomolecular Chemistry 2026 2026

Article

### Sequential Michael addition, cross-coupling and [3 + 2] cycloaddition reactions within the

**coordination sphere of chiral Ni(ii) Schiff base complexes derived from dehydroamino acids: pathways to the asymmetric synthesis of structurally diverse O-substituted**

Emma A. Khachatryan, Lusine Yu. Sahakyan, Anna S. Tovmasyan, Gagik S. Melikyan,

Henrik A. Panosyan, Anna F. Mkrtchyan, Norio Shibata, Andrei V. Malkov, Ashot S. Saghyan

RSC Advances 2025 10558-10564

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*Article*

**Glaser Heterocoupling Reaction for the Synthesis of Enantiomerically Enriched Unnatural  $\alpha$ -Amino Acids Incorporating Asymmetric Diyne Moieties: Mechanistic Insights and Optimization**

Liana Hayriyan, Anna Tovmasyan, Anna Grigoryan, Karapet Ghazaryan, Barbara Biondi,

Olgert L. Dallakyan, Mikayel S. Chobanyan, Hayk Zaqaryan, Ashot Saghyan, Anna Mkrtchyan

ACS Omega 2025 A-G

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*Article*

**Synthesis and Biological Activity of Ultrashort Antimicrobial Peptides Bearing a Non-Coded Amino Acid**

Cristina Peggion, Andrea Schivo, Martina Rotondo, Simona Oancea, Lucia-Florina Popovici,

Teodora Călin, Anna Mkrtchyan, Ashot Saghyan, Liana Hayriyan, Emma Khachatryan,

Fernando Formaggio, Barbara Biondi

Journal of Peptide Science 2025 8

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*Article*

**Strategy for synthesizing O-protected (S)- $\alpha$ -substituted serine analogs via sequential Ni(ii)-complex-mediated cross-coupling and cycloaddition reactions**

Anna S. Tovmasyan, Anna F. Mkrtchyan, Avetis H. Tsaturyan, Peter Langer, Andrei V. Malkov,

Ashot S. Saghyan

New Journal of Chemistry 2025 11640-11645

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*Article*

**A<sup>3</sup>-Mannich coupling reaction via chiral propargylglycine Ni(ii) complex: an approach for synthesizing enantiomerically enriched unnatural  $\alpha$ -amino acids**

Liana Hayriyan, Anna Grigoryan, Hasmik Gevorgyan, Avetis Tsaturyan, Armen Sargsyan, Peter Langer,

Ashot Saghyan, Anna Mkrtchyan

RSC Advances 2025 35379-35387

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*Article*

**Unnatural Phosphorus-Containing  $\alpha$ -Amino Acids and Their N-FMOC Derivatives: Synthesis and In Vitro Investigation of Anticholinesterase Activity**

Ani S. Dadayan, Anna F. Mkrtchyan, Atravazd S. Poghosyan, Slavik A. Dadayan, Lala A. Stepanyan,

Monika H. Israyelyan, Anna S. Tovmasyan, Avetis H. Tsaturyan, Nona A. Hovhannisyan,

Vigen O. Topuzyan, Tatevik H. Sargsyan, Ashot S. Saghyan

ChemistrySelect 2024 1-10

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*Article*

**BSA Binding and Aggregate Formation of a Synthetic Amino Acid with Potential for Promoting Fibroblast Proliferation: An In Silico, CD Spectroscopic, DLS, and Cellular Study**

Hayarpi Simonyan, Rosanna Palumbo, Satenik Petrosyan, Anna Mkrtchyan, Armen Galstyan,

Ashot Saghyan, Pasqualina Liana Scognamiglio, Caterina Vicidomini, Marta Fik-Jaskólka,

Giovanni N. Roviello

*Article*

**Synthesis and evaluation of new mono- and binuclear salen complexes for the C $\alpha$ -alkylation reaction of amino acid substrates as chiral phase transfer catalysts**

Anahit M. Hovhannisyan, Anna S. Tovmasyan, Anna F. Mkrtchyan, Karapet R. Ghazaryan, Ela V. Minasyan, Olgert L. Dallakyan, Mikayel S. Chobanyan, Hayk Zakaryan, Giovanni N. Roviello, Ashot S. Saghyan  
Molecular Catalysis 2024 114618

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*Article*

**Synthesis of enantiomerically enriched  $\beta$ -substituted analogs of (S)- $\alpha$ -alanine containing 1-phenyl-1H-1,2,3-triazole groups**

Artavazd S. Poghosyan, Ashot S. Saghyan, Peter Langer, Ela V. Minasyan, Karapet R. Ghazaryan, Anahit M. Hovhannisyan, Anna F. Mkrtchyan, Volodya Mirzoyan, Emma A. Khachatryan  
Amino Acids 2024 67

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*Article*

**Synthesis, Characterization, and Study of Catalytic Activity of Chiral Cu(II) and Ni(II) Salen Complexes in the  $\alpha$ -Amino Acid C- $\alpha$  Alkylation Reaction**

Anna S. Tovmasyan, Anna F. Mkrtchyan, Hamlet N. Khachatryan, Mary V. Hayrapetyan, Robert M. Hakobyan, Artavazd S. Poghosyan, Avetis H. Tsaturyan, Ela V. Minasyan, Viktor I. Maleev, Vladimir A. Larionov, Armen G. Ayvazyan, Norio Shibata, Giovanni N. Roviello, Ashot S. Saghyan  
Molecules 2023 1180

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*Article*

**Asymmetric Synthesis of Derivatives of Alanine via Michael Addition Reaction and their Biological Study**

Mkrtchyan Anna, Tovmasyan Anna, Paloyan Ani, Sargsyan Armen, Simonyan Hayarpi, Sahakyan Lusine, Petrosyan Satenik, Hayriyan Liana, Sargsyan Tatevik  
Synlett 2022 2013-2018

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*Article*

**Synthesis of enantiomerically enriched non-protein  $\alpha$ -amino acids and their study as aldose reductase inhibitors**

Anna F. Mkrtchyan, Liana A. Hayriyan, Armen S. Sargsyan, Ani M. Paloyan, Anna S. Tovmasyan, Ani J. Karapetyan, Artur A. Hambardzumyan, Nelli A. Hovhannisyan, Henrik A. Panosyan, Hamlet N. Khachatryan, Ani S. Dadayan, Ashot S. Saghyan  
Synthetic Communications 2021 1433-1450

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*Article*

**Synthesis of Biomimetic Polymers Based on Nonproteinogenic  $\alpha$ -Amino Acids**

Nino Zavrashvili, Giuli Otinashvili, David Tugushi, Tengiz Kantaria, Temur Kantaria, Nino Kupatadze, Ekaterina Chkhaidze, Nino Neparidze, Ashot Saghyan, Anna Mkrtchyan, Artavazd Poghosyan  
Bulletin of the Georgian National Academy of Sciences 2021 41-47

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*Article*

**New Cationic Polymers Composed of Non-Proteinogenic  $\alpha$ -Amino Acids**

NINO ZAVRADASHVILI, GIULI OTINASHVILI, TEMUR KANTARIA, NINO KUPATADZE, DAVID TUGUSHI,

ASHOT SAGHYAN, ANNA MKRTCHYAN, SERGEY POGHOSYAN, RAMAZ KATSARAVA

Advanced Materials, Polymers, and Composites: New Research on Properties, Techniques, and Applications  
2021 277-287

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*Article*

**Spectroscopic and SEM evidences for G4-DNA binding by a synthetic alkyne-containing amino acid with anticancer activity**

Marta A.Fik-Jaskółka, Anna F.Mkrtchyan, Ashot S.Saghyan, Rosanna Palumbo, Agnieszka Belter, Liana A.Hayriyan, Hayarpi Simonyan, ValentinaRoviello, Giovanni N.Roviello

SPECTROCHIMICA ACTA PART A-MOLECULAR AND BIOMOLECULAR SPECTROSCOPY 2020 117884

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*Article*

**Asymmetric synthesis, biological activity and molecular docking studies of some unsaturated  $\alpha$ -amino acids, derivatives of glycine, allylglycine and propargylglycine**

A. F. Mkrtchyan, A. S. Saghyan, L. A. Hayriyan, A. S. Sargsyan, A. J. Karapetyan, A. S. Tovmasyan, A. H. Tsaturyan, E. V. Minasyan, A. S. Poghosyan, A. M. Paloyan, H. A. Panosyan, Lu. Yu. Sahakyan

Journal of Molecular Structure 2020 127850

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*Article*

**Biological macromolecule binding and anticancer activity of synthetic alkyne-containing L-phenylalanine derivatives**

Marta A. Fik-Jaskółka, Anna F. Mkrtchyan, Ashot S. Saghyan, Rosanna Palumbo, Agnieszka Belter, Liana A. Hayriyan, Hayarpi Simonyan, Valentina Roviello, Giovanni N. Roviello

Amino Acids 2020 755-769

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*Article*

**Asymmetric Synthesis of Tailor-Made Amino Acids Using Chiral Ni(II) Complexes of Schiff Bases. An Update of the Recent Literature**

Yupiao Zou, Jianlin Han, Ashot S. Saghyan, Anna F. Mkrtchyan, Hiroyuki Konno, Hiroki Moriwaki, Kunisuke Izawa, Vadim A. Soloshonok

Molecules 2020 2739

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*Article*

**Using the Ni-[(Benzylpropyl)amino]benzophenone complex in the Glaser reaction for the synthesis of bis  $\alpha$ -amino acids**

Anna F. Mkrtchyan, Liana A. Hayriyan, Ani J. Karapetyan, Anna S. Tovmasyan, Avetis H. Tsaturyan, Victor N. Khrustalev, Viktor I. Maleev, Ashot S. Saghyan

New Journal of Chemistry 2020 8

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*Article*

**Исследование асимметрического нуклеофильного бис-присоединения дегидроаланиновых комплексов Ni(II)**

Петросян С. Г., Симонян А. М., Мкртчян А. Ф., Саакян Л. Ю., Цатурян А. О., Сагян А. С.

Հայաստանի քիմիական հանդես 2020 213-222

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*Article*

**Synthesis of Enantiomerically Enriched Non-Proteinogenic  $\alpha$ -Amino Acids Using the Suzuki Reaction**

Saghyan Ashot, Mkrtchyan Anna, Mardiyan Zorayr, Hayriyan Liana, Yuri N. Belokon, Peter Langer  
ChemistrySelect 2019 4686-4688

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Article

**Synthesis of enantiomerically enriched alkynylaryl-substituted  $\alpha$ -amino acids through Sonogashira reactions**

Ashot S. Saghyan, Anna F. Mkrtchyan, Zorayr Z. Mardiyan, Liana A. Hayriyan, Ani J. Karapetyan, Yuri N. Belokon, Peter Ehlers, Peter Langer  
ChemistrySelect 2019 13806-13809

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Article

**Synthesis of Optically Pure (S,E)-2-Amino-5-arylpent-4-enoic Acids by Heck Reactions of Nickel Complexes**

Mkrtchyan Anna F, Saghyan Ashot S, Mardiyan Zorayr Z, Parpart Silvio, Ehlers Peter, Petrosyan Andranik, Langer Peter  
Synlett 2018 A-F

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Article

**СИНТЕЗ ЭНАНТИОМЕРНО ОБОГАЩЕННОЙ (S)-2-АМИНО-5-(4-ФТОРФЕНИЛ)ПЕНТ-4-ЕНОВОЙ КИСЛОТЫ И ЕЕ  $\alpha$ -АЛЛИЛЗАМЕЩЕННОГО АНАЛОГА**

А. С. САГЯН, З. З. МАРДИЯН, А. Ф. МКРТЧЯН, А. О. ЦАТУРЯН  
Химический Журнал Армении 2018 107-116

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Article

**Nickel-coordinated chiral enols and Michael addition intermediate stabilized by the Ni-C bond**

Liana A. Hayriyan, Anna F. Mkrtchyan, Margarita Moskalenko, Viktor Maleev, Zalina Gugkaeva, Mikhail Il'in, Kirill Babiyevski, Pavel Dorovatorskiy, Viktor Khrustalev, Aleksandr Peregudov, Yu. Belokon  
Mendeleev Communications 2018 464-466

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Manual

**Ամինաթթուների ֆիզիկաքիմիական, օպտիկական հատկությունները և ստացման եղանակները**  
Հ.Մ. Սիմոնյան, Ա.Ֆ. Սկրտչյան

2018 40

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Manual

**ՊԵՊՏԻԴՆԵՐ, ՖԵՐՄԵՆՏՆԵՐ**

Ա. Ֆ. Սկրտչյան, Հ.Մ. Սիմոնյան

2018 36

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Article

**Five-year achievements in the field of the asymmetric synthesis of unsaturated amino acids**

Saghyan A.S., Belokon, Yu.N., Mkrtchyan, A.F., Langer P, Mardiyan Z.Z.

Chemical Journal of Armenia 2017 54-71

<http://www.flib.sci.am/eng/Qimia/Frame.html>

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Article

**Асимметрический синтез новых гетероциклически замещенных аналогов  $\alpha$ -аминомасляной кислоты, содержащих замещенные триазольные группы в боковом радикале**

А.С.Сагиян, Л.Ю.Саакян, А.М.Симонян, С.Г.Петросян, А.Ф.Мкртчян, М.А.Самвелян, Т.В.Кочикян,  
П.Лангер  
Химический Журнал Армении 2017 71-81  
<http://www.flib.sci.am/eng/Qimia/Frame.html>

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*Article*

**New generations of optically active non-proteinogenic  $\alpha$ -amino acids, synthesis and study**  
Hovhannisyanyan A. M., Saghyanyan A. S., Mkrtchyan A. F., Simonyan H. M

Հայաստանի քիմիական հանդես 2016 81-101  
<http://www.flib.sci.am/eng/Qimia/Frame.html>

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*Article*

**Synthesis of enantiomerically enriched amino acids containing acetylenic bond in the side-chain radical**

Hayarpi M. Simonyan, Ashot. S. Saghyanyan, Anna F. Mkrtchyan, Ani J. Karapetyan, Zorayr Z. Mardiyan,  
Liana A. Hayriyan  
International Journal of Chemical Engineering and Applications 2016 413-416  
<http://www.ijcea.org/>

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*Article*

**Synthesis of optically pure (S)-2-amino-5-arylpent-4-ynoic acids by Sonogashira reactions and their potential use as highly selective potent inhibitors of aldose reductase**

Silvio Parpart, Andranik Petrosyan, Syed Jawad Ali Shah, Raji Akeem Adewale, Peter Ehlers,  
Tatevik Grigoryan, Anna F. Mkrtchyan, Zorayr Z. Mardiyan, Ani J. Karapetyan, Avetis H. Taturyan,  
Ashot S. Saghyanyan, Jamshed Iqbal, Peter Langer  
RSC Advances 2015 107400-107412  
<http://pubs.rsc.org/en/journals/journalissues/ra?e=1#!subjects>

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*Article*

**Синтез положительно заряженных комплексов CoIII и их исследование в качестве хиральных катализаторов в реакциях асимметрического генерирования С-С связи.**

Мкртчян А. Ф., Геолчанян А. В., Симонян А. М., Петросян С. Г., Сагиян А. С., Малеев В. И.,  
Белоконь Ю. Н., Хрусталеv В. Н  
Химический Журнал Армении 2015 108-121  
<http://www.flib.sci.am/eng/Qimia/Frame.html>

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*Conference*

**Asymmetric synthesis of new enantiomerically enriched  $\alpha$ -amino acids**

A.S. Saghyanyan, A.F. Mkrtchyan, S.G. Petrosyan, J.A. Yedoyan, A.M. Simonyan, A.V. Geolchanyan,  
P. Langer, A.M. Petrosyan

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*Conference*

**Metallocomplex precursors for the synthesis of 18f-fluorinated aromatic amino acids labelled in alpha fluoromethyl moiety**

A. V. Geolchanyan, A. S. Saghyanyan, A. F. Mkrtchyan, S. G. Petrosyan, H. M. Simonyan, V. I. Maleev,  
Yu. N. Belokon, R. Schibli, R. N. Krasikova

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*Conference*

**Asymmetric synthesis of new enantiomerically enriched  $\alpha$ -amino acids**

A.S. Saghyan, S.Gh. Petrosyan, A.V. Geolchanyan, A.F. Mkrtchyan, Z.Z. Mardiyan

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*Conference*

**Efficient method for the synthesis of novel enantiomerically enriched derivatives of propargylglycine**

Anna F. Mkrtchyan, Ashot S Saghyan, Liana A Hayriyan, Ani J Karapetyan, Zorayr Z Mardiyan, Hayarpi M Simonyan, Adonc Hovhannes

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*Conference*

**Asymmetric synthesis of potential biologically active new heterocyclic analogs of (S)- $\alpha$ -alanine containing 3,4-substituted 5-thioxo-1,2,4- triazoles in the side-chain radical**

H.M. Simonyan, L.Yu. Sahakyan, S.Gh. Petrosyan, A.F. Mkrtchyan, N.N. Baghyan,, J.N. Saribekyan, A.S. Saghyan

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*Conference*

**Asymmetric synthesis of new heterocyclic analogs of alpha-aminopropionic acid and alpha-aminobutyric acid via Michael nucleophilic addition reactions**

Hayarpi Simonyan, Lusine Sahakyan, Anna Mkrtchyan, Satenik Petrosyan, Ashot Saghyan

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*Conference*

**Efficient method for the synthesis of novel enantiomerically enriched derivatives of unsaturated amino acids**

Ashot Saghyan, Anna Mkrtchyan, Liana Hayriyan, Zorayr Mardiyan, Hayarpi Simonyan

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*Conference*

**Asymmetric synthesis of enantiomerically enriched analog of  $\alpha$ -aminobutyric acid containing heterocycle in the side chain radical .**

L.Yu.Sahakyan, A.S. Saghyan, H.M. Simonyan, S.Gh.Petrosyan, A.F.Mkrtchyan

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*Conference*

**Asymmetric synthesis and biological activity of novel heterocycle substituted analogues of  $\alpha$ -aminobutyric acid**

Sahakyan L.Yu., Simonyan H. M, Petrosyan S. Gh., Mkrtchyan A. F., Simonyan M. A., Saghyan A. S., Sekoyan E. S.

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*Conference*

**Asymmetric synthesis of potential biologically active new analogs of (S)-alanine containing nitrogenous bases in the side-chain radical**

H.M.Simonyan, L.Yu. Sahakjan, A.F.Mkrtchyan, S.Gh.Petrosyan, N.N.Baghyan, A.O.Voskanyan, J.N.Saribekyan, A.S.Saghyan

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*Conference*

**Асимметрический синтез новых производных (S)- $\alpha$ -аланина, содержащих 3-замещенные 4-изобутил-5-тиоксо-1,2,4-триазолы в боковом радикале**

А.М.Симонян, Н.Н.Багян, А.О.Восканян, Ж.Н.Сарибекян, Л.Ю.Саакян, А.Ф.Мкртчян, С.Г.Петросян, А.С.Сагиян

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*Conference*

**Asymmetric synthesis of enantiomerically enriched analogs of NiII complexes of (S)-**

**allylglycine**

L.A.Hayriyan, A.F.Mrtchyan, Z.Z.Mardiyán, A.J.Karapetyan, H.V. Adonc, H.M. Simonyan, S.Gh. Petrosyan, L.Yu.Sahakyan, A.S. Saghyan

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Conference

**Synthesis of optically pure (S)-2-amino-5-(3-fluorophenyl)-2-(prop-2-yn-1-yl)pent-4-ynoic acid by using Sonogashira reaction**

Z.Z. Mardiyán, L.A. Hayriyan, A.F.Mkrtchyan, A.X.Tsaturyan, A.J. Karapetyan, H.V. Adonc, H.M. Simonyan, S.Gh.Petrosyan, L.Yu.Sahakyan, A.S. Saghyan

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Conference

**FIVE-YEAR ACHIEVEMENTS IN THE FIELD OF THE ASYMMETRIC SYNTHESIS OF UNSATURATED AMINO ACIDS**

A. S. Saghyan, L.A. Hayriyan, Z.Z. Mardiyán, A.F. Mkrtchyan

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Conference

**THE SYNTHESIS OF POTENTIALLY ACTIVE NEW ENANTIOMERICALLY ENRICHED DERIVATIVES OF GLYCINE THROUGH CLICK REACTION**

H.V. Adonts, A.S. Saghyan, L.A.Hayriyan, A.F. Mkrtchyan

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Conference

**Asymmetric synthesis of enantiomerically enriched new analogs of Ni II complexes of (S)-propargylglycine**

L. Hayriyan, A. Saghyan, H. Simonyan, A. Karapetyan, Z. Mardiyán, A. Mkrtchyan

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Conference

**Asymmetric synthesis of new enantiomerically enriched  $\alpha$ -amino acids**

A.S. Saghyan, A.F. Mkrtchyan, Z.Z. Mardiyán, L.A. Hayriyan, H.V. Adonts

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Conference

**Synthesis and reactivity of chiral enols coordinated with Ni<sup>2+</sup> ions and a case of a Michael adduct intermediate stabilized by the Ni-C bond**

L. A. Hayriyan, A. F. Mkrtchyan, Y. N. Belokon, A. S. Saghyan

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Conference

**Asymmetric synthesis of enantiomerically enriched new analogs of Ni II complexes which contain unsaturated alkene groups**

L. Hayriyan, A. Mkrtchyan, A. Saghyan

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Conference

**Asymmetric synthesis of optically active derivatives of  $\alpha$ -aminobutyric acid containing triazole groups in the side chain radical**

L.Sahakyan, H.Simonyan, S. Petrosyan, A. Mkrtchyan, A. Saghyan, E. Sekoyan

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Conference

**SYNTHESIS OF A NOVEL HETEROCYCLIC AMINO ACID AND ITS USE FOR THE SYNTHESIS OF SUGAR-AMINO ACID CONJUGATES**

Hayarpi Simonyan, Giovanni Roviello, Anna Mkrtchyan, Lusine Sahakyan, Satenik Petrosyan,

Ashot Saghyan

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*Conference*

**Asymmetric synthesis of new enantiomerally enriched unsaturated  $\alpha$ -amino acids by promotion of cross-coupling reactions**

Liana Hayriyan, Anna Mkrtchyan, Ashot Saghyan

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*Conference*

**Asymmetric synthesis and biological activity of some unsaturated  $\alpha$ -amino acids**

L. Hayriyan, A. Karapetyan, A. Tovmasyan, A. Mkrtchyan, A. Sargsyan, A. Saghyan

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*Conference*

**Synthesis and Biological Evaluation of Unusual Alpha-amino Acids for Biomedical Strategies**

Hayarpi Simonyan, Giovanni N. Roviello, Ernest Ewert, Marta Fik-Jaskółka, Anna Mkrtchyan

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