

## Asst. Prof. MUHAMMED SAYRAÇ

### Personal Information

**Email:** muhammedsayrac@cumhuriyet.edu.tr

**Web:** <https://avesis.cumhuriyet.edu.tr/muhammedsayrac>

### Education Information

Doctorate, Texas A&M University - College Station, United States Of America 2013 - 2017

Postgraduate, Texas A&M University, United States Of America 2011 - 2013

Undergraduate, Turkey 2005 - 2009

### Research Areas

Natural Sciences

### Academic Titles / Tasks

Assistant Professor, Sivas Cumhuriyet University, Mühendislik Fakültesi, Nanoteknoloji Mühendisliği, 2020 - Continues

Research Assistant, Cankiri Karatekin University, Faculty Of Science, Department Of Physics, 2017 - 2020

### Courses

Nanomalzemelerin Karakterizasyonu Laboratuvarı-II, Undergraduate, 2021 - 2022

Kariyer Planlama, Undergraduate, 2021 - 2022

Mühendisler için Termodinamik - II(İngilizce), Undergraduate, 2021 - 2022

Mühendisler İçin Bilgisayar Uyg. - II, Undergraduate, 2021 - 2022

Modern Fizik (İngilizce), Undergraduate, 2021 - 2022

Mühendisler İçin Bilgisayar Uyg. - I (İngilizce), Undergraduate, 2020 - 2021

Isı Aktarımı, Undergraduate, 2020 - 2021

Mühendisler için Olasılık ve İstatistik(İng), Undergraduate, 2020 - 2021

Mühendisler için Termodinamik - I (İngilizce), Undergraduate, 2020 - 2021

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

- I. **Intensity-dependent nonlinear optical properties in an asymmetric Gaussian potential quantum well-modulated by external fields**  
SAYRAÇ M., Turkoglu A., Mora-Ramos M. E. , Urgan F.  
OPTICAL AND QUANTUM ELECTRONICS, vol.53, no.9, 2021 (Journal Indexed in SCI)
- II. **Influence of hydrostatic pressure, temperature, and terahertz laser field on the electron-related optical responses in an asymmetric double quantum well**  
SAYRAÇ M., Turkoglu A., Urgan F.  
EUROPEAN PHYSICAL JOURNAL B, vol.94, no.6, 2021 (Journal Indexed in SCI)
- III. **Generation of even and odd harmonics in the XUV region with controlling the relative delay and**

### **polarization of two-color fields**

SAYRAÇ M., Kolomenskii A. A. , Dong J., Schuessler H. A.

Optik, vol.226, 2021 (Journal Indexed in SCI Expanded)

- IV. **Generation of enhanced even harmonics of fundamental radiation in temporally separated two-color laser fields**  
Sayrac M., Kolomenskii A. A. , Dong J., Schuessler H. A.  
JOURNAL OF ELECTRON SPECTROSCOPY AND RELATED PHENOMENA, vol.233, pp.22-27, 2019 (Journal Indexed in SCI)
- V. **Pressure dependence of high order harmonic generation in nitrogen molecular gas and atmospheric air**  
Sayrac M., Kolomenskii A. A. , Schuessler H. A.  
OPTIK, vol.179, pp.994-1000, 2019 (Journal Indexed in SCI)
- VI. **Pressure optimization and phase matching of high harmonics generation in CO<sub>2</sub> and C<sub>2</sub>H<sub>2</sub> molecular gases**  
Sayrac M., Kolomenskii A. A. , Schuessler H. A.  
JOURNAL OF ELECTRON SPECTROSCOPY AND RELATED PHENOMENA, vol.229, pp.1-6, 2018 (Journal Indexed in SCI)
- VII. **Dissociative ionization of acetonitrile in intense femtosecond laser fields**  
Boran Y., Kolomenskii A. A. , Sayrac M., KAYA N., Schuessler H. A. , Strohaber J.  
JOURNAL OF PHYSICS B-ATOMIC MOLECULAR AND OPTICAL PHYSICS, vol.50, no.13, 2017 (Journal Indexed in SCI)
- VIII. **Nonlinear mixing of optical vortices with fractional topological charge in Raman sideband generation**  
Strohaber J., Boran Y., Sayrac M., Johnson L., Zhu F., Kolomenskii A. A. , Schuessler H. A.  
JOURNAL OF OPTICS, vol.19, no.1, 2017 (Journal Indexed in SCI)
- IX. **Extension of filament propagation in water with Bessel-Gaussian beams**  
Kaya G., KAYA N., Sayrac M., Boran Y., Strohaber J., Kolomenskii A. A. , Amani M., Schuessler H. A.  
AIP ADVANCES, vol.6, no.3, 2016 (Journal Indexed in SCI)
- X. **Probing nonadiabatic molecular alignment by spectral modulation**  
KAYA N., Kaya G., Sayrac M., Horan Y., Anumula S., Strohaber J., Kolomenskii A. A. , Schuessler H. A.  
OPTICS EXPRESS, vol.24, no.3, pp.2562-2576, 2016 (Journal Indexed in SCI)
- XI. **High harmonic generation in Ne and H-2 gas mixtures**  
Sayrac M., Kolomenskii A. A. , Strohaber J., Schuessler H. A.  
JOURNAL OF THE OPTICAL SOCIETY OF AMERICA B-OPTICAL PHYSICS, vol.32, no.12, pp.2400-2405, 2015 (Journal Indexed in SCI)
- XII. **Pressure optimization of high harmonic generation in a differentially pumped Ar or H-2 gas jet**  
Sayrac M., Kolomenskii A. A. , Anumula S., Boran Y., Hart N. A. , KAYA N., Strohaber J., Schuessler H. A.  
REVIEW OF SCIENTIFIC INSTRUMENTS, vol.86, no.4, 2015 (Journal Indexed in SCI)

## **Articles Published in Other Journals**

- I. **Computation of Refractive Index Values of Inert Gases at Near Infrared and XUV Region based on Mathematica Software**  
SAYRAÇ M.  
Adiyaman University Journal of Science, vol.11, no.1, 2021 (Other Refereed National Journals)
- II. **High Harmonic Generation in Ar and N<sub>2</sub> Gas Mixture Using Ultrashort High Power Laser System**  
SAYRAÇ M.  
Journal of the Institute of Science and Technology, pp.1659-1665, 2020 (Other Refereed National Journals)
- III. **Characterization of GaAs/GaAlAs Heterostructures Grown on GaAs Substrate using High Resolution X-ray Diffraction Method**  
Sayrac H., SAYRAÇ M., Elagöz S.

Afyon Kocatepe Üniversitesi Fen ve Mühendislik Bilimleri Dergisi, 2020 (Refereed Journals of Other Institutions)

**IV. BEHAVIOUR OF LASER BEAM IN NONLINEAR MEDIA**

SAYRAÇ M., SAYRAÇ H., ARI M., TAPLAMACIOĞLU M. C.

International Journal on "Technical and Physical Problems of Engineering" (IJTPE), 2019 (Refereed Journals of Other Institutions)

**V. GENERAL OVERVIEW OF WIRELESS COMMUNICATION TECHNOLOGY**

SAYRAÇ M., ARI M., TAPLAMACIOĞLU M. C.

International Journal on "Technical and Physical Problems of Engineering" (IJTPE), vol.11, pp.25-30, 2019 (Refereed Journals of Other Institutions)

## **Refereed Congress / Symposium Publications in Proceedings**

**I. ALIGNMENT DEPENDENCE OF HIGH HARMONIC GENERATION SIGNAL FROM CO<sub>2</sub> MOLECULE USING PUMP-PROBE TECHNIQUE**

SAYRAÇ M.

OECD STUDIES CONFERENCE of NATURAL and ENVIRONMENTAL SCIENCES, Ankara, Turkey, 19 - 21 March 2020

**II. DIFFRACTIVE IMAGING USING A TABLE-TOP COHERENT FEMTOSECOND SOFT X RAY LASER SOURCE**  
SAYRAÇ M.

ANKARA II. ULUSLARARASI BİLİMSEL ARAŞTIRMALAR KONGRESİ, 6 - 08 March 2020

**III. GaAs/Ga<sub>1-x</sub>Al<sub>x</sub>As Heteroyapısının Yapısal Karakterizasyonu**

SAYRAÇ H., SAYRAÇ M.

25. Yoğun Madde Fiziği Toplantısı, Turkey, 20 December 2019

**IV. PROPAGATION OF GAUSSIAN BEAM IN NONLINEAR MEDIA**

SAYRAÇ M., SAYRAÇ H., ARI M., TAPLAMACIOĞLU M. C.

15th International Conference on "Technical and Physical Problems of Electrical Engineering", 14 - 15 October 2019

**V. ARCHITECTURE AND FUTURE PROSPECT OF 5G TECHNOLOGY**

SAYRAÇ M., ARI M., TAPLAMACIOĞLU M. C. , REHABI J.

2019 International Conference on Multidisciplinary, Education, Science, Engineering and Technology, 20 - 21 September 2019

**VI. Gaussian laser beam and its parameters**

SAYRAÇ H., SAYRAÇ M.

Turkish Physical Society-35th International Physics Congress (TPS-, 4 - 08 September 2019

**VII. Structural characterization of GaAs/ GaAlAs heterostructures by XRD method**

SAYRAÇ H., SAYRAÇ M., Elagöz S.

Turkish Physical Society-35th International Physics Congress (TPS-35)", 4 - 08 September 2019

**VIII. Femtosaniyeli Lazerler ile Doğrusal Olmayan Frekans Dönüşümü ve Uygulamaları**

SAYRAÇ M.

24. Yoğun Madde Fiziği Ankara Toplantısı, Ankara, Turkey, 21 December 2018

**IX. ADVANTAGES AND CHALLENGES OF FREE SPACE OPTICAL COMMUNICATION**

SAYRAÇ M., ARI M., TAPLAMACIOĞLU M. C.

14th International Conference on Technical and Physical Problems of Electrical Engineering, Nakhchivan, Azerbaijan, 15 - 17 October 2018

**X. HIGH ORDER HARMONIC GENERATION FROM LASER ALIGNED MOLECULE**

SAYRAÇ M.

II. International Scientific and Vocational Studies Congress, 5 - 08 July 2018

**XI. PRESSURE DEPENDENCE OF HIGH ORDER HARMONIC GENERATION IN NITROGEN MOLECULE**

SAYRAÇ M.

II. INTERNATIONAL SCIENTIFIC AND VOCATIONAL STUDIES CONGRESS, Turkey, 5 - 08 July 2018

**XII. HIGH HARMONIC GENERATION IN TWO COLOR LASER FIELD**

SAYRAÇ M.

II. INTERNATIONALSCIENTIFIC AND VOCATIONALSTUDIES CONGRESS, 5 - 08 July 2018

- XIII. **Nonlinear mixing of optical vortices with fractional topological charges in raman sideband generation**  
Strohhaber J., Boran Y., SAYRAÇ M., Johnson L., Zhu F., Kolomenskii A. A. , Schuessler H. A.  
APS March Meeting 2017, New Orleans, Louisiana, United States Of America, 13 - 17 March 2017, pp.1253
- XIV. **Toward Imaging of Small Objects with XUV Radiation**  
SAYRAÇ M., Kolomenskii A. A. , Boran Y., Schuessler H. A.  
APS March Meeting 2017, New Orleans, Louisiana, United States Of America, 13 - 17 March 2017, pp.1253
- XV. **Manifestations of induced molecular alignment in the interaction of ultrafast laser pulses with gases**  
Kolomenskii A. A. , KAYA N., Kaya G., Sayrac M., Boran Y., Strohhaber J., Schuessler H. A.  
25th Annual International Laser Physics Workshop (LPHYS), Yerevan, Armenia, 11 - 15 July 2016, vol.826
- XVI. **Intensity dependences and angular distributions of acetonitrile fragments under irradiation by femtosecond laser pulses**  
BORAN Y., Kolomenskii A. A. , SAYRAÇ M., Schuessler H., Strohhaber J.  
2016 Southwest Ultrafast Conference – University of Texas at Austin, University of Texas at Austin, United States Of America, 16 June 2016
- XVII. **High harmonic generation with two-color fields**  
SAYRAÇ M., Kolomenskii A. A. , BORAN Y., Strohhaber J., Schuessler H.  
2016 Southwest Ultrafast Conference – University of Texas at Austin, Austin, United States Of America, 16 June 2016
- XVIII. **Ionization and dissociation of acetonitrile with intense laser pulses**  
BORAN Y., Kolomenskii A. A. , SAYRAÇ M., Schuessler H., Strohhaber J.  
Bulletin of the American Physical Society, Waco, Texas, United States Of America, 29 - 31 October 2015, vol.60
- XIX. **Generation of enhanced even and odd harmonics in a two-color laser field**  
SAYRAÇ M., Kolomenskii A. A. , BORAN Y., Strohhaber J., Schuessler H.  
Bulletin of the American Physical Society, Waco, Texas, United States Of America, 29 - 31 October 2015, vol.60
- XX. **Enhancing high harmonic flux**  
SAYRAÇ M., Kolomenskii A. A. , Anumula S., BORAN Y., KAYA G., KAYA N., Schuessler H.  
5th international Conference on Attosecond Physics, Canada, 7 - 08 June 2015
- XXI. **Molecular alignment control of filamentation**  
KAYA N., KAYA G., SAYRAÇ M., Anumula S., BORAN Y., Kolomenskii A. A. , Amani M., Schuessler H.  
5th international Conference on Attosecond Physics, Canada, 07 June 2015
- XXII. **Improving high harmonic generation conversion efficiency**  
SAYRAÇ M., Kolomenskii A. A. , Anumula S., BORAN Y., KAYA G., KAYA N., Schuessler H.  
Bulletin of the American Physical Society, Baytown, Texas, United States Of America, 5 - 07 March 2015, vol.60
- XXIII. **Optimum conditions of high order harmonic generation with a gas jet**  
SAYRAÇ M., Kolomenskii A. A. , Anumula S., BORAN Y., KAYA G., KAYA N., Schuessler H.  
Bulletin of the American Physical Society, College Station, Texas, United States Of America, 17 - 19 October 2014, vol.59
- XXIV. **New possibilities for the efficiency enhancement of the high harmonic generation process in gas mixtures of Ne and H<sub>2</sub>**  
SAYRAÇ M., Kolomenskii A. A. , Anumula S., KAYA G., KAYA N., Schuessler H.  
Bulletin of the American Physical Society, College Station, Texas, United States Of America, 17 - 19 October 2014, vol.59
- XXV. **Molecular rotational constants measured with photoelectron ionization yield**  
KAYA G., KAYA N., Hart N., SAYRAÇ M., Anumula S., Strohhaber J., Kolomenskii A. A. , Schuessler H.  
Bulletin of the American Physical Society, CollegeStation, Texas, United States Of America, 17 - 19 October 2014, vol.59
- XXVI. **Filament propagation length of femtosecond pulses with Gaussian and Bessel-Gaussian modes**  
KAYA N., SAYRAÇ M., KAYA G., BORAN Y., Strohhaber J., Kolomenskii A. A. , Schuessler H.

- XXVII. **Improving conversion efficiency of high harmonic generation with gas mixtures**  
SAYRAÇ M., Kolomenskii A. A. , Strohaber J., BORAN Y., KAYA N., Schuessler H.  
The 24th International Conference on Atomic Physics (ICAP), Washington, Kiribati, 3 - 08 August 2014
- XXVIII. **Molecular alignment measured with photoelectron ionization yields**  
KAYA G., KAYA N., Strohaber J., Hart N., SAYRAÇ M., Kolomenskii A. A. , Schuessler H.  
The 24th International Conference on Atomic Physics (ICAP), Washington, Kiribati, 3 - 08 August 2014
- XXIX. **Effect of different transverse modes of femtosecond pulses on filament propagation**  
KAYA N., KAYA G., SAYRAÇ M., Strohaber J., Kolomenskii A. A. , Schuessler H.  
The 24th International Conference on Atomic Physics (ICAP), Washington, Kiribati, 3 - 08 August 2014
- XXX. **Pressure optimization of high harmonic generation with argon gas jet**  
SAYRAÇ M., Kolomenskii A. A. , Strohaber J., BORAN Y., KAYA G., KAYA N., Schuessler H.  
The 24th International Conference on Atomic Physics (ICAP), Washington, Kiribati, 3 - 08 August 2014
- XXXI. **Optimization and control of the buildup of high harmonics by spatial pulse shaping**  
Kolomenskii A. A. , SAYRAÇ M., Cook E., Strohaber J., Schuessler H.  
4th International Conference on Attosecond Physics, Paris, France, 8 - 12 July 2013
- XXXII. **Enhancement of HHG in neon-hydrogen gas mixtures**  
Kolomenskii A. A. , SAYRAÇ M., Strohaber J., Schuessler H.  
4th International Conference on Attosecond Physics, Paris, France, 8 - 12 July 2013
- XXXIII. **Control of high harmonic generation by wave front shaping**  
Kolomenskii A. A. , SAYRAÇ M., Cook E., Wood J., Nava R., Strohaber J., Paulus G. G. , Schuessler H.  
The 23rd International Conference on Atomic Physics, France, 23 - 27 July 2012

## Supported Projects

Özçelik S., Sayraç M., Özen Y., TUBITAK Project, Yakın Kızıl Ötesi Spektrumu Soğurucu Optik Filtre Geliştirilmesi, 2021 - 2023

Sayraç M., Alyar H., Project Supported by Higher Education Institutions, Metal Katkılı Bakır Oksit İnce Filmlerin Sentezlenmesi ve Özelliklerinin İncelenmesi, 2019 - 2021

## Edit Congress and Symposium Activities

Yoğun Madde Fiziği , Invited Speaker, Ankara, Turkey, 2020

## Citations

Total Citations (WOS):48

h-index (WOS):5

## Scholarships

Turkish Higher Education, Ministry of Education, 2011 - 2017