

Asst. Prof. Refik ARAT



Personal Information

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International Researcher IDs

ScholarID: [dunqXhcAAAAJ](https://orcid.org/0000-0002-5330-1478)

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Publons / Web Of Science ResearcherID: AAG-1769-2019

ScopusID: 55862120300

Yoksis Researcher ID: 329338

Education Information

Doctorate, Istanbul Technical University, Fen Bilimleri Enstitüsü, Chemistry, Turkey 2010 - 2018

Postgraduate, Istanbul Technical University, Fen Bilimleri Enstitüsü, Chemistry, Turkey 2007 - 2010

Undergraduate, Istanbul University, Faculty Of Science, Department of Chemistry, Turkey 2001 - 2005

Biography

Refik ARAT received his PhD from ITU Chemistry Department in 2018. He conducted post-doctoral research for 1 year at Leibniz Institute of Photonic Technology in Jena/Germany between 2019-2020 with TÜBİTAK-2219 post-doctoral research program. He worked as a "researcher" for 1 year in the Nanosis Project carried out by the Sabancı University Nanotechnology Application and Research Center (SUNUM), and still continues to work as a "guest-researcher" in the same project.

He studies on preparation of transparent and conductive thin films containing graphene and silver nanowires for optoelectronic and photovoltaic applications; synthesis of phase change materials and magnetic nanoparticles and, their polymeric nanoweb composites fabrication via electrospinning technique for novel thermal energy storage materials and magnetic hyperthermia on cancer therapy, respectively; silica aerogel synthesis by sol-gel processing and polymer/aerogel nanocomposites production via electrospinning technique for thermal protective clothing; hydrogel synthesis and drug delivery systems; nanoclay surface modification for improve compatibility in polymeric matrices and increase thermal and mechanical properties of polymer nanocomposites.

Foreign Languages

English, B2 Upper Intermediate

Dissertations

Doctorate, Investigation of the effects of halloysite and sepiolite nanoadditives on polystyrene, Istanbul Technical University, Fen Bilimleri Enstitüsü, Chemistry, 2018

Postgraduate, Synthesis and characterization of new generation polymeric additives for CEM I cement mortar, Istanbul Technical University, Fen Bilimleri Enstitüsü, Chemistry, 2010

Research Areas

Chemistry, Raman Spectroscopy, Sensors, Spectroscopical Methods, Thermal Methods, Surface Analysis, Physical Chemistry, Interface Chemistry, Polymers and Their Applications, Functional Polymers, Conductive Polymers, Composites, nanocomposites, Characterization of Polymers, New Technologies in Polymer Chemistry, Polymeric Adsorbents, Polymeric Films, Polymeric Materials, Spectroscopy, Textile Chemistry, Thermoset Polymers, Fuel Cells, Surface Chemistry, Boron Chemistry, Catalysis, Carbon Chemistry

Academic Titles / Tasks

Assistant Professor, Istanbul University, Faculty of Science, Department of Chemistry, 2022 - Continues

Courses

General Chemistry I, Undergraduate, 2023 - 2024

Polymer Chemistry, Doctorate, 2022 - 2023

Kimyasal Kinetik, Postgraduate, 2023 - 2024

Chemistry I, Undergraduate, 2023 - 2024

Physical Chemistry Laboratory I, Undergraduate, 2023 - 2024

Selected Topics in Physical Chemistry, Doctorate, 2023 - 2024

Chemistry I, Undergraduate, 2023 - 2024

Nuclear Chemistry, Undergraduate, 2023 - 2024

Çekirdek Kimyası, Undergraduate, 2022 - 2023

Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Non-destructive covalent surface alkylation of graphitic carbon nitride for enhanced photocatalytic dye degradation in water**
ARAT R., Fidan T., Yüce M., KURT H., Kemal Bayazit M.
FlatChem, vol.43, 2024 (SCI-Expanded)
- II. **A handbook for graphitic carbon nitrides: revisiting the thermal synthesis and characterization towards experimental standardization**
Fidan T., Arat R., Bayazit M. K.
MATERIALS RESEARCH EXPRESS, vol.10, no.9, pp.95905-95918, 2023 (SCI-Expanded)
- III. **Wet chemical method for highly flexible and conductive fabrics for smart textile applications**
Arat R., Jia G., Plentz J.
JOURNAL OF THE TEXTILE INSTITUTE, vol.114, no.4, pp.639-644, 2023 (SCI-Expanded)
- IV. **Hydrophobic deep eutectic solvent effect on acrylic acid separation from aqueous media by using reactive extraction and modeling with response surface methodology**
LALİKOĞLU M., Asci Y. S., Tarim B. S., YILDIZ M., Arat R.
SEPARATION SCIENCE AND TECHNOLOGY, vol.57, no.10, pp.1563-1574, 2022 (SCI-Expanded)
- V. **Hydrophobic silica-aerogel integrated polyacrylonitrile nanofibers**

Arat R., Başkan H., Özcan G., Altay P.

JOURNAL OF INDUSTRIAL TEXTILES, vol.51, no.3_SUPPL, 2022 (SCI-Expanded)

- VI. **Optimization and modeling of microwave-assisted extraction of curcumin and antioxidant compounds from turmeric by using natural deep eutectic solvents**
Doldolova K., BENER M., LALİKOĞLU M., AŞÇI Y. S., Arat R., APAK M. R.
FOOD CHEMISTRY, vol.353, 2021 (SCI-Expanded)
- VII. **Solution processed transparent conductive hybrid thin films based on silver nanowires, zinc oxide and graphene**
Arat R., Jia G., Dellith J., Dellith A., Plentz J.
MATERIALS TODAY COMMUNICATIONS, vol.26, 2021 (SCI-Expanded)
- VIII. **Low temperature chemical treatment of graphene films made by double self-assembly process to improve sheet resistance**
Arat R., Jia G., Plentz J.
DIAMOND AND RELATED MATERIALS, vol.111, 2021 (SCI-Expanded)
- IX. **Ethanol sensing with pure and boric acid doped electrospun CuInS₂ nanofibers in the presence of relative humidity**
YAĞCI Ö., Arat R., Sarier N., Omur B. C., ALTINDAL A.
MATERIALS SCIENCE IN SEMICONDUCTOR PROCESSING, vol.104, 2019 (SCI-Expanded)
- X. **Development of heat storing poly(acrylonitrile) nanofibers by coaxial electrospinning**
Noyan E. C. B., Onder E., Sarier N., Arat R.
THERMOCHIMICA ACTA, vol.662, pp.135-148, 2018 (SCI-Expanded)
- XI. **Study of the morphological and thermal properties of polystyrene nanocomposites based on modified halloysite nanotubes with styrene-maleic anhydride copolymers**
Arat R., Uyanik N.
MATERIALS TODAY COMMUNICATIONS, vol.13, pp.255-262, 2017 (SCI-Expanded)
- XII. **The manufacture of organic carbonate-poly(methyl ethylacrylate) nanowebs with thermal buffering effect**
Onder E., Sarier N., Arat R.
THERMOCHIMICA ACTA, vol.657, pp.170-184, 2017 (SCI-Expanded)
- XIII. **Production of PEG grafted PAN copolymers and their electrospun nanowebs as novel thermal energy storage materials**
Sarier N., Arat R., Menceoglu Y., Onder E., Boz E. C., Oguz O.
THERMOCHIMICA ACTA, vol.643, pp.83-93, 2016 (SCI-Expanded)
- XIV. **Ultrasound assisted solvent free intercalation of montmorillonite with PEG1000: A new type of organoclay with improved thermal properties**
Onder E., Sarier N., Ukuser G., Ozturk M., Arat R.
THERMOCHIMICA ACTA, vol.566, pp.24-35, 2013 (SCI-Expanded)

Articles Published in Other Journals

- I. **Silika Aerojelin Hidrofobik Polistiren Nanoliflerin Termal Özellikleri Üzerine Etkisi**
ARAT R.
Afyon Kocatepe Üniversitesi Fen ve Mühendislik Bilimleri Dergisi, vol.23, no.6, pp.1497-1506, 2023 (Peer-Reviewed Journal)
- II. **Surface Modification of Nanoclays with Styrene-Maleic Anhydride Copolymers**
Arat R., Uyanik N.
NATURAL RESOURCES, vol.08, no.03, pp.1-14, 2017 (Peer-Reviewed Journal)

Refereed Congress / Symposium Publications in Proceedings

- I. **Manyetik Hidrojel Mikrokürelerin Fotokatalitik Özelliklerinin İncelenmesi**
Tıǧlı Ş. N., ARAT R.
35. Ulusal Kimya Kongresi, Diyarbakır, Turkey, 9 - 12 September 2024
- II. **Investigation of the Effects of Reduced Silver Nanoparticles on Graphitic Carbon Nitride**
Arat R.
35. Ulusal Kimya Kongresi, Diyarbakır, Turkey, 9 - 12 September 2024
- III. **Preparation of Chitosan/ZnO/Nanoclay Composite Films and their Characterization**
Arat R.
3. Uluslararası Ege Bilimsel Araştırmalar Sempozyumu, İzmir, Turkey, 11 - 12 March 2023, pp.11-12
- IV. **PEGylation of g-C₃N₄ and Its Effect on Photocatalytic Activity**
Arat R., Fidan T., Yüce M., Kurt H., Bayazıt M. K.
5th International Eurasian Conference on Biological and Chemical Sciences, Ankara, Turkey, 23 - 25 November 2022, pp.67
- V. **Preparation of magnetite nanoparticle and fatty acid incorporated poly(methacrylic acid-ethyl acrylate) nanowebs via electrospinning for magnetic hyperthermia application**
Sarıer N., Onder E., Carvalho M. D., Ferreira L. P., Cruz M. M., Arat R.
18th World Textile Conference (AUTEX), İstanbul, Turkey, 20 - 22 June 2018, vol.460

Supported Projects

Arat R., Arvas M. B., Kahraman Y., Gümüş Ö. Y., Project Supported by Higher Education Institutions, Improving the flame retardancy and mechanical properties of PLA-based composites produced by additive manufacturing for a sustainable aviation, 2024 - 2025

Arat R., TUBITAK Project, Effect of graphitic carbon nitride composite photocatalysts containing silver nanoparticles stabilized in hydrogel on Rhodamine B photodegradation under visible light, 2023 - 2024

Congress and Symposium Activities

5th International Eurasian Conference on Biological and Chemical Sciences, Attendee, Ankara, Turkey, 2022