

Assist. Prof. Seda DEMIREL TOPEL
(MSc/PhD)



Personal Data

Address: Antalya Bilim University,
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ACADEMIC DEGREES

Ph.D	Organic Chemistry	Akdeniz University, Antalya, Turkey Bilkent University, Ankara, Turkey	2009-2013
M.Sc.	Organic Chemistry	Akdeniz University, Antalya, Turkey	2006-2009
B.Sc.	Chemistry	Akdeniz University, Antalya, Turkey	2002-2006

EMPLOYMENT HISTORY

2017-.....	Assist. Prof., Antalya Bilim University, Faculty of Engineering, Department of Electrical&Electronics Engineering. Antalya, Turkey
2016-2017	Post Doc. Researcher, Akdeniz University, Department of Material Science and Engineering. Antalya, Turkey
2013-2015	Post.Doc. Researcher, SLU (Sveriges lantbruksuniversitet), Department of Molecular Sciences, Uppsala, Sweden.
2010-2013	Researcher, Bilkent University National Nanotechnology Research Center (UNAM), Ankara, Turkey.
2009	Erasmus fellow, Lund University, Kemi Centrum, Department of Organic Chemistry, Lund, Sweden.

PROJECTS

International Projects

No	Title	Project No	Funder	Role	Year
1	Recovery of the critical rare earth elements (REEs) from industrial wastewater through the development of multifunctional ultrafiltration membrane technology	221N430	1071 TUBITAK/DAAD Bilateral Project (TR-Germany)	Principle Investigator	2022-2024
2	Development of functional carrier systems in which the activity of biotechnological enzyme-drugs triggered with near-infrared light using upconverting nanoparticles	119Z962	TUBITAK-2515 Cost Action	Researcher	2020-2022
3	New environmental friendly approaches in minerals processing	309373	European Comission	Post-Doc fellow	2013-2015

			FP7-NMP-2012-LARGE-6	Uppsala, Sweden	
3	Bioactive secondary metabolites	VR-621.2005.6 274	Vetenskapsrådet (Sweden)	Researcher Lund, Sweden	2009

National Projects

No	Title	Project No	Role	Year
1	Development of Boron-containing antibacterial injectable hydrogels and investigation of their use as intracanal medicament for endodontic therapy	122S702	Researcher	2022-2024
2	Preparation and characterization of upconverting nanoparticles for uricase immobilization and controlled manipulation of enzyme activity under near infrared light	2173 Bapsis Inonu University	Researcher	2020-2021
3	Design and synthesis of novel nanoparticles for MRI applications	TUBITAK-1002 116-Z-164	Researcher	2017-2018
4	Synthesis of luminescent upconversion nanoparticle encapsulated cellulose based nanocapsules for drug delivery	FBA-2016-1808 BAP Akdeniz University	Researcher	2016-2017
5	Synthesis of novel near infrared photosensitizers for photodynamic therapy	TUBITAK-1001 110T076	PhD Fellow UNAM	2010-2013
6	Synthesis and characterization of novel BODIPY photosensitizers for photodynamic therapy	B.A.P 2011.01.0115.002 Akdeniz University	Researcher	2011-2012
7	Synthesis of some ferrocenyl substituted pyrazolo [4,3-c] derivatives as potential antitumor agents	B.A.P 2007.01.0105.001 Akdeniz University	Researcher	2007-2010

ARTICLES IN REFEREE JOURNALS

1. Burhan Ateş, Ahmet Ulu, Meltem Asiltürk, Samir Abbas Ali Noma, Seda Demirel Topel , Gamze Dik, Onur Özhan, Büşra Bakar, Azibe Yıldız, Nigar Vardı, Hakan Parlakpinar, Enhancement of enzyme activity by laser-induced energy propulsion of upconverting nanoparticles under near-infrared light: A comprehensive methodology for in vitro and in vivo applications, International Journal of Biological Macromolecules, 2024, 129343, DOI: 10.1016/j.ijbiomac.2024.129343
2. Samir Abbas Ali Noma, Gamze Dik, Canbolat Gürses, Ali Kuruçay, Seda Demirel Topel , Ahmet Ulu, Meltem Asiltürk, Burhan Ateş "Near-infrared inducible supports in bio-catalysts design: A useful and versatile tool in enhancement of enzyme activity" Molecular Catalysis, 2024, 560, 114130, DOI: 10.1016/j.mcat.2024.114130
3. Gamze Dik, Samir Abbas Ali Noma, Ahmet Ulu, Seda Demirel Topel, Meltem Asiltürk Ersoy, Burhan Ateş, Preparation, Characterization of Upconverting Nanoparticles for Uricase Immobilization and Controlled Manipulation of Uricase Activity by Near-Infrared Light, Journal of Luminescence, 2024, 120617, DOI: 10.1016/j.jlumin.2024.120617
4. V. Kyshkarova, D. Marcin Behunova, I. Melnyk and S.Demirel Topel "Shungite/Poly(vinyl alcohol) Hybrid Hydrogels: An Efficient Adsorption Material for Rare Earth Metals in Aqueous Media", J. App. Polymer Sci. 2024, 141, e55001, DOI:10.1002/app.55001.
5. S. Demirel Topel "Exploring the photocatalytic and photodynamic effects of Bodipy-linked titanium dioxide nanoparticles", Turkish J Chem. 2023, 47, 1407-1419, DOI:10.55730/1300-0527.3623.
6. A. Mokeddem, S. Benykhlef, A. A. Bendaoudi, N. Boudouaia, H. Mahmoudi, Z. Bengharez, S. Demirel Topel , Ö. Topel "Sodium-Alginate based composite films for effective removal of congo red and coralene dark red 2B dyes: kinetic, isotherm and thermodynamic analysis" Water, 2023, 15(9), 1709; https://doi.org/10.3390/w15091709 .
7. S.Demirel Topel , "Encapsulation of Diiodo-BODIPY in Sodium Dodecyl Sulfate Stabilized Cellulose Acetate Capsules for Enhanced Singlet Oxygen Production in Aqueous Solution", ChemistrySelect, 2023, 8, e202203579, https://doi.org/10.1002/slct.202203579 .

- 8.** O. Kerbouche, M.İ.Beyaz, and **S. Demirel Topel** "Construction of a Miniaturized Monosaccharide Detection System Based on Measuring Electric Current and Testing Its Performance Using a Bodipy Fluorescent Dye" Eng. Proc. 2023, 35(1), 24; <https://doi.org/10.3390/IECB2023-14587>
- 9.** **S. Demirel Topel**, M. I Beyaz "Fluorescence quenching based bodipy-boronic acid linked viologen dual system for potential glucose sensing applications" **Sensor review**, 2022, DOI: [10.1108/SR-03-2021-0088](https://doi.org/10.1108/SR-03-2021-0088)
- 10.** **S. Demirel Topel**, S. Balcioglu, B. Ates, M. Asilturk, O. Topel, M.B. Ericson, Cellulose acetate encapsulated upconversion nanoparticles-A novel theranostic platform, **Materials Today Commun**, 2021, DOI: [10.1016/j.mtcomm.2020.101829](https://doi.org/10.1016/j.mtcomm.2020.101829)
- 11.** T. Gurkan Polat, **S. Demirel Topel**, pH Responsive carboxymethylcellulose conjugated superparamagnetic iron oxide nanocarriers, **J. Sci. Pers.**, 2019, 3, 99-110.
- 12.** S. Demirel Topel, Ö. Topel, G. Turgut Cin, Fabrication and characterization of TiO_2 nanoparticles conjugated luminescence upconversion nanoparticles, **Biointerface Res. Appl. Chem.** 2018, 8, 3197-3202.
- 13.** N. Nohut Maslakci, E. Eren, **S. Demirel Topel**, G. Turgut Cin, A. Uygun Oksuz, Electrospun Fibers of Plasma Modified Chitosan/PET/Ferrocenyl Substituted N-Acetyl-2-Pyrazoline Derivatives. **J. Applied Polymer Science**. 2016, DOI:10.1002/APP.43344
- 14.** S. Erbas Cakmak, F. Pir Cakmak, **S. Demirel Topel**, T. B. Uyar, E. U. Akkkaya, Selective photosensitization through an AND logic response: optimization of the pH and glutathione response of activatable photosensitizers. **Chem Commun**. 2015, 51, 12258.
- 15.** **S. Demirel Topel**, Ö. Topel, R.B. Botancioğlu, A. T. Koparal, Synthesis and characterization of Bodipy functionalized magnetic iron oxide nanoparticles for potential biological applications. **Colloids and Surfaces B: Biointerfaces**, 2015, 128, 245-53.
- 16.** E. Polido Legaria, **S. Demirel Topel**, V. Kessler, G. A. Seisenbaeva, Molecular insights into the selective action of magnetically removable complexone-grafted adsorbent. **Dalton Trans**. 2015, 44 (3), 1273-82.
- 17.** **S. Demirel Topel**, E. Polido Legaria, C. Tiseanu, J. Rocha, V. Kessler, G. A. Seisenbaeva, Hybrid silica nanoparticles for sequestration and luminescence detection of rare earth elements. **J. Nanoparticle Research**, 2014, 16, 2783-2800.
- 18.** G. A. Seisenbaeva, **S. Demirel Topel**, V. Kessler, Molecular single approach to single source precursors of perovskite stanne material., **Polyhedron**, 2014, 81, 21-26.
- 19.** **S. Demirel Topel**, G. Turgut Cin, E. U. Akkaya, Near IR excitation of heavy atom free Bodipy photosensitizers through the intermediacy of upconverting nanoparticles. **Chem. Commun**, 2014, 50, 8896-8899.
- 20.** G. Turgut Cin, G. Verep, **S. Demirel Topel**, V. Ciger, An efficient synthesis of ferrocenyl containing 1,3,4-oxadiazole derivatives via oxidative cyclization reaction. **Chemistry of Heterocyclic Comp.**, 2013, 49 (7), 1061-1067.
- 21.** B. R. Bostancioglu, **S. Demirel Topel**, G. Turgut Cin, T. Koparal, Novel ferrocenyl-containing N-acetyl-2-pyrazolines inhibit in vitro angiogenesis and human lung cancer growth by interfering with F-actin stress fiber polymerization. **Drug and Chem. Toxicol.**, 2013, 36(4), 484-495.
- 22.** G. Turgut Cin, **S. Demirel Topel**, A. Çakıcı, A. Ozek Yıldırım, A. Karadağ, Synthesis, crystal structure and thermal properties of N-acetyl-3-(2-furyl)-5-ferrocenyl-2- pyrazoline and N-acetyl-3-(2-thienyl)-5-ferrocenyl-2-pyrazoline. **J. Chem. Crystallogr.** 2012, 42, 372-380.
- 23.** G. Turgut Cin, **S. Demirel**, A. Çakıcı, Synthesis of Novel Ferrocenyl-Containing Pyrazolo[4,3-c]quinolines via Modified Pictet-Spengler Reaction. **J. Organomet. Chem.** 2011, 696, 613-621.
- 24.** G. Turgut Cin, **S. Demirel**, N. Karadayı, and O. Büyükgüngör, 1-Acetyl-5-ferrocenyl-3-phenyl)-2-pyrazoline. **Acta Crystallographica Section E** 2009; E64,m127.
- 25.** G. Turgut Cin, **S. Demirel**, N. Karadayı, and O. Büyükgüngör, 1-Acetyl-3-ferrocenyl-5-(2-nitrophenyl)-2-pyrazoline. **Acta Cryst. Sec.E**; 2008; E64, m514.

Proceedings Published in International Conferences

<p>1.S.Demirel Topel "Investigating Singlet Oxygen Generation in Titanium Dioxide Nanoparticles Decorated with 2,6-Diodo-Boron-Dipyrromethene Molecules" Oral presentation, 5th Eurosia Biochemical Approaches & Technologies (5.EBAT), 2-5 November, 2023, Antalya, Turkey.</p>
<p>2.B. Göç, S. Demirel Topel, N. Kiraz, D. Yanık "Boric acid loaded Carboxymethylcellulose/N-succinyl chitosan hydrogels: Investigation of their contact angle on teeth surfaces and boron delivery in physiological media", 5th Eurosia Biochemical Approaches & Technologies (5.EBAT), 2-5 November, 2023, Antalya, Turkey.</p>
<p>3.S. Demirel Topel "Bodipy-Included Polymeric Nanocapsules as Singlet Oxygen Generators: Investigating Their Photodynamic Actions", Oral Presentation, 17th Nanoscience and Nanotechnology Conference (NanoTR17), 27-29 August, 2023, pp: 119.</p>
<p>4.B. Göç, N. Kiraz, S. Demirel Topel, D. Yanık, "Root Canal Irrigation Agents Integrated Polyvinyl alcohol /Chitosan Hydrogels and Their Physical Characteristics", Poster Presentation, 17th Nanoscience and Nanotechnology Conference (NanoTR17), İzmir, Turkey, 27-29 August, 2023, pp: 255.</p>
<p>5. B.Göç and S. Demirel Topel, "Fabrication Of Shungite Enriched Ag/Cu Nano catalysts Integrated to Catalytic Converters and Investigation of Their Efficiencies", Poster Presentation, 17th Nanoscience and Nanotechnology Conference (NanoTR17), İzmir, Turkey, 27-29 August, 2023, pp: 269.</p>
<p>6. S. Demirel Topel and O. Kerbouche, "Exploring the Interaction Between Boronic Acid Conjugated Viologen and Bodipy and Its Utilization on Monosaccharides Detection", Oral Presentation, 3rd Anatolian Conference on Organic Chemistry, 13-16 March 2023, pp:31.</p>
<p>7.S. Demirel Topel, Kyshkarova Viktoriia ,Melniky Inna, An organic based hybrid hydrogel: its preperation method, structural investigation and lanthanum uptake. In proceeding of Ege Conferences, 20-22th December, 2022.</p>
<p>8.V. Kyshkarova, I. Melnyk, S. Demirel Topel. Photocatalytic degradation of bodipy dye with a shungite based PVA hydrogel under UV-light irradiation. In Proceeding of Academic World International Conference : Antalya, Turkey, 7th – 8th April, 2022. Ed.: Dr. P. Suresh M.E, Ph.D. - Antalya, Turkey : Institute for Technology and Research (ITRESEARCH), April, 2022, p. 1-4. ISBN 978-93-90150-32-8.</p>
<p>9. F. Kostak, O.Kerbouche, S.Pehlivanoglu and S.Demirel Topel " Bodipy Photosensitizer Linked Hybrid Nanomaterials for Photodynamic Therapy", 10th Advanced Nanomaterials Congress, Oral Presentation, Oct. 24-27, 2021, Sweden.</p>
<p>10.S. Demirel Topel "Enhancing the stability of nanotheranostic systems", 5th International conference on Nanomedicine and Nanotechnology, Oral Presentation, April 09, 2021, UK</p>
<p>11.S. Demirel Topel "Optimization of hydrothermal synthesis of Ce3+ doped NaYF4, Yb3+, Er3+ upconversion nanoparticles and investigation of their size, morphology and phase transitions, 5th International conference on Engineering and Natural Sciences, ICENS, page:6, June 12-16, 2019, Prague, Czech Republic</p>
<p>12.S. Demirel Topel, Multifunctional magnetic nanocarrier:Synthesis, characterization and its Doxorubicin release, NanoTR-15, page: 91, 3-6 Nov.2019, Antalya.</p>
<p>13. S. Demirel Topel, Ö.Topel, G.Turgut Cin, "Fabrication and characterization of TiO2 nanoparticles conjugated to Ce3+ co-doped NaYF4, Yb3+, Er3+ luminescence upconversion nanoparticles", International advances in applied physics and material science congress (APMAS), 144, 22-26 April 2017, Muğla-Turkey.</p>
<p>14. S. Demirel Topel, M. Asiltürk, Ö. Topel "Development of multifunctional cellulose acetate Micro/Nanocapsules as pH-responsive drug carriers" NanoTR-13, page:37, 22-25 Oct 2017, Belek, Antalya</p>
<p>15. Ö. Topel, S. Demirel Topel and M. Asiltürk, Nd-sensitized upconversion nanoparticles for bioimaging applications, NanoTR-13, page: 346, 22-25 Oct 2017, Belek, Antalya.</p>
<p>16. G.Turgut Cin, S. Demirel Topel, N.Nohut, E.Eren, A.Uygun Oksuz, "Plasma Modified Chitosan/N-Acetyl-2-Pyrazoline Derivative Nanofibers", IEEE International Conference on Plasma Sciences (ICOPS), sayfa: 567, 24-28 Mayis 2015, Belek, Antalya.</p>
<p>17. S. Demirel Topel, Önder Topel, Engin U. Akkaya. "BODIPY-Conjugated Magnetic Nanoparticles for Bioimaging Applications" E-MRS 2012, page: H29, 17-21 Sept, 2012, Warsaw, Poland.</p>
<p>18. Gulcan Verep, S. Demirel Topel, Velican Ciger, Gunseli Turgut Cin. Efficient synthesis and characterization of novel ferrocene-containing 1,3,4- oxadiazole derivative. 13th Tetrahedron Symposium, Page: P3.104, 26-29 June, 2012, Amsterdam, Netherland</p>

19. S. Demirel Topel , Marta Vico Solano, Carlos Solano Arribas, Olov Sterner. "Design, synthesis and characterization of 9-bromo-2-p-tolyl-[1,2,4]triazolo[4,3 c]quinazoline-3,5(2h-6h)-dione" <i>7th Eurosian Meeting On Heterocyclic Chemistry</i> , sayfa: 43, 17-21 Haziran 2012, Boğaziçi University, İstanbul
20. S. Demirel Topel , Marta Vico Solano, Carlos Solano Arribas, Olov Sterner "Synthesis of novel triazoloquinazolinedione derivatives using Pd-catalyzed Negishi cross-coupling reaction". <i>7th Eurosian Meeting On Heterocyclic Chemistry</i> , Page: 43, 17-21 Haziran 2012, Boğaziçi University, İstanbul.
21. S. Demirel , Abban Cakici, Gunseli Turgut Cin. "Synthesis of biological active ferrocenyl substituted pirazolo[4,3-c]quinolones" <i>IMMPC-ISPC Meeting</i> , Page: 53, 30 Sept-2 Oct 2010, Hacettepe Üniversitesi, Ankara.

Proceedings Published in National Conferences

1. Seda Demirel Topel . "Fotodinamik tedavi amaçlı Bodipy-konjugeli upconverting nanopartiküllerin sentezi" 2. <i>Ulusal Organik Kimya Kongresi</i> , sayfa:11, 24-26 Sept. 2014, Bilkent Üniversitesi, Ankara.
2. R. Beklem Bostancioğlu, A. Tansu Koparal, Seda Demirel Topel , Günseli Turgut Cin. "Akciğer kanseri tedavisinde yeni bir umut işiği: Ferrosen grubu içeren N-asetil-2-pirazolinler" 2. <i>İlaç kimyası üretimi, teknolojisi ve standartizasyonu kongresi</i> , sayfa: P300, 21-23 Mart 2014, Beldibi, Antalya.
3. Abban Cakici, Seda Demirel , Gunseli Turgut Cin. "Bazı yeni 2-pirazolin türevlerinin sentezi ve spektroskopik metotlarla yapılarının aydınlatılması" <i>XI. Ulusal Spektroskopi Kongresi</i> , sayfa: 116, 23-26 Haziran 2009, Gazi Üniversitesi, Ankara.

PATENTS (Pending/Approved)

1. B. Ateş, M. Asiltürk, H. Parlaklınar, N. Vardı, S. Demirel Topel , A. Ulu, G. Dik, S. A.A. Noma, "Development Of Enzyme Carrier Systems with Activity Triggered By Near Infrared Light (NIR)" TR2021011319A2 ; WO2023287372A1
2. S. Demirel Topel , S. Okuyucu, M. Saglık, M.H. Ugurlu, "A Shungite Based Thin Film Polymer For Electromagnetic Field Protection And Its Production Method", WO2023069031A1
3. E. Özbay, S. Demirel Topel , E. Arslan, "Nanoparçacık İçeren Yüksek Kapasitanslı Kapasitor Yapısı Ve Bunun Üretim Yöntemi", TR201921981A2
4. S. Demirel Topel , A.D. Özer, "Etiketler İçin Yüksek Enerji Dönüştürücü Nanoparçacık Katkılı Akrilik-Su Veya Solvent Bazlı Boyar Madde Ve Üretim Yöntemi", TR201814950A2
5. S. Demirel Topel , A.D. Özer, "Yüksek Enerji Dönüştürücü Nanoparçacık Katkılı Patlayıcı Madde", TR201811593A2

TEACHING

Academic Year	Term	Course	Hours Theoretical	Hours Recitation/Lab	Number of Students
2023-2024	Fall	CHEM 101 EE 491	3 1	1 -	336 4
	Spring	BES 104 EE492	2 1	2 -	42 4
2022-2023	Fall	CHEM 101 BES 103 EE 491	3 2 1	1 2 -	259 36 5
	Spring	BES 104 ECE 515 EE 492	2 3 1	2 - -	36 6 5
2021-2022	Fall	CHEM 101 BES 103	3 3	1 2	223 26
	Spring	BES 104 ECE 515	3 3	2 -	26 8
2020-2021	Fall	CHEM 101 EE 491 TOK 101	3 1 3	1 - -	213 4 35
	Spring	EE 492	1	-	4

		TOK 102 EE 112 ECE 515	3 26 4	- - -	35 28 6
2019-2020	Fall	CHEM 101	3	2	181
	Spring	EE 112 ECE585 ECE 515	3 3 3	- - -	28 19 9
2018-2019	Fall	CHEM 101 GEN100	3 1	2 -	227 220
	Spring	IE350	3	-	20
2017-2018	Fall	SCI 101	3	-	137
	Spring	SCI 102 IE 350	3 3	- -	150 4
2016-2017	Fall	CHEM 101	3	-	140
	Spring				

CHEM 101: General Chemistry for Engineers (Undergraduate)

BES 103: General Chemistry-1 (for the students of Nutrition and Dietetics in Faculty of Health) (Undergraduate)

BES-104: Organic Chemistry-1 (for the students of Nutrition and Dietetics in Faculty of Health) (Undergraduate)

TOK 101: Organic Chemistry-1 (for the students of Dentistry in Faculty of Health) (Undergraduate)

TOK 102: Organic Chemistry-2 (for the students of Dentistry in Faculty of Health) (Undergraduate)

EE 112: Introduction to Electrical and Electronics Engineering (Undergraduate)

EE 491: Senior Project-1 (Undergraduate)

EE 492: Senior Project-2 (Undergraduate)

ECE 585: Scientific research methods and ethics (Graduate)

ECE 515: Principles and applications of Nanotechnology (Graduate)

GEN100: Introduction to Engineering (Undergraduate)

SCI 102: General Biology for Engineers (Undergraduate)

IE 350: Industrial applications of Nanotechnology (area elective) (Undergraduate)

THESIS

-PhD Thesis (2013): “**Synthesis of BODIPY conjugated upconversion nanoparticles for photodynamic therapy**” (Prof. Dr. Günseli Turgut Cin, Advisor, Akdeniz Üniversitesi, Prof. Dr. Engin Umut Akkaya, Co-advisor, UNAM, Bilkent University)

-Ms.C. (2009): “**Synthesis of some ferrocenyl substituted N-acetyl-2-pyrazoline and ferrocenyl substituted pyrazolo[4,3-c]quinoline derivatives as potential antitumor agents**” (Prof. Dr. Günseli Turgut Cin, Advisor, Akdeniz Üniversitesi)