Prof. Duygu AVCI SEMİZ

Dept. of Chemistry, Boğaziçi Univ. 34342 Bebek-İstanbul; TURKEY

ACADEMIC TITLES

2004-present	Professor
1998-2004	Associate Professor
1996-1998	Assistant Professor

RESEARCH INTERESTS

Synthesis of novel functional monomers and polymers, water-soluble polymers, dental restorative materials, biocompatible materials, synthesis of novel photoinitiators, photopolymerization.

ACADEMIC & RESEARCH EXPERIENCE

1996-present	**BOĞAZİÇİ UNIVERSITY, DEPT. OF CHEMISTRY** Faculty Member & Researcher
1996-2004	**UNIVERSITY OF SOUTHERN MISSISSIPPI, SCHOOL OF POLYMERS AND HIGH PERFORMANCE MATERIALS** Researcher (2 mo/yr)
1993-1996	**UNIVERSITY OF SOUTHERN MISSISSIPPI, SCHOOL OF POLYMERS AND HIGH PERFORMANCE MATERIALS** Post-doctoral Researcher
1986-1993	**BOĞAZİÇİ UNIVERSITY, INSTITUTE OF ENVIRONMENTAL SCIENCES & DEPT. OF CHEMISTRY** Research Assistant & Teaching Assistant

EDUCATION

1988-1993	**BOĞAZİÇİ UNIVERSITY, DEPT. OF CHEMISTRY:** Ph. D.
1986-1988	**BOĞAZİÇİ UNIVERSITY, INSTITUTE OF ENVIRONMENTAL SCIENCES:** M.S.
1980-1984	**BOĞAZİÇİ UNIVERSITY, DEPT. OF CHEMISTRY:** B.S.

AWARDS

2001	Boğaziçi University "Excellence in Research" award

PUBLICATIONS

1. D. Avci, S. H. Kusefoglu, Functionalization and Crosslinking Reactions of Ethyl α-Hydroxymethylacrylate, *J.Polym. Sci., Polym. Chem. Ed.*, 31, 2941, 1993.

2. D. Avci, S. H. Kusefoglu, R. D. Thompson, L. J. Mathias, Ester Derivatives of α-Hydroxymethylacrylates: Itaconate Isomers Giving High Molecular Weight Homopolymers, *Macromolecules*, 27, 1981, 1994.

3. D. Avci, S. H. Kusefoglu, R. D. Thompson, L. J. Mathias, Ester Derivatives of α-Hydroxymethylacrylates: Itaconate Isomers Giving High Molecular Weight Homopolymers, *J. Polym. Sci., Polym. Chem. Ed.*, 32(15), 2937,1994.

4. D. Avci, L. J. Mathias, Cyclopolymerization of Cinnamate Ester Derivatives of Alkyl α -(Hydroxymethyl) Acrylates, *Polym. Bull.*, 35(6), 671, 1995.

5. K. Thigpen, D. Avci, L. J. Mathias, Superfast Methacrylate Photomonomers: Ester Derivatives of Ethyl α -Hydroxymethacrylates, *Macromolecules*, 28(26), 8872, 1995.

6. D. Avci, L. J. Mathias, Examples of New Synthetic Routes to Pendant Ester-Ether Derivatives of Ethyl α -Hydroxymethylacrylate Polymers, *Polym. Bull.*, 36, 133, 1996.

7. D. Avci, L. J. Mathias, K. Thigpen, Photopolymerization Studies of Alkyl and Aryl Ester Derivatives of Ethyl α -Hydroxymethylacrylate*, J. Polym. Sci., Polym. Chem. Ed.*, 34, 3191, 1996.

8. D. Avci, C. Haynes, L. J. Mathias, Cyclopolymerization of Amine-Linked Diacrylate Monomers, *J. Polym. Sci., Polym. Chem. Ed.*, 35(10), 2111, 1997.

9. D. Avci, L.J. Mathias, Synthesis and Cyclopolymerization of Novel Allyl-Acrylate Quaternary Ammonium Salts, *J. Polym. Sci., Polym. Chem. Ed.*, 37, 901, 1999.

10. D. Avci, M. Michalovic, L. J. Mathias, Polymerization of α-(N-vinyl formamidomethyl)acrylates: cyclopolymers from non-symmetric monomers, *Des. Mon. Polym.*, 2(3), 199, 1999.

11. D. Avci, Synthesis and Characterization of Quaternized poly-alkyl α-Chloroacetoxymethacrylates, *Polym. Bull.*, 44, 469, 2000.

12. D. Avci, K. Lemopulo, L. J. Mathias, Cyclocopolymerization of Allyl-Acrylate Quaternary Ammonium Monomers and Diallyldimethylammonium Chloride, *J. Polym. Sci. Polym. Chem. Ed.*, 39, 640, 2001.

13. N. S. Tuzun, V. Aviyente, D. Avci, N. Ince, A Computational Approach to the Polymerizabilities of Diallylamines, *J. Molec. Model.*, 7, 257, 2001.

14. D. Avci, A. Bayır, Copolymerization of Acrylamide with Allyl-acrylate Quaternary Ammonium Monomers, *Macromol. Symp.*, 181, 17, 2002.

15. D. Avci, L. J. Mathias, Synthesis and Polymerization of Phosphorus-containing Acrylates, *J. Polym. Sci. Polym. Chem. Ed.*, 40, 3221, 2002.

16. D. Avci, N. Mol, L. Dagasan, New Cationic Polyelectrolytes for Flocculation Processes of Baker's Yeast Waste Water, *Polym. Bull.*, 48, 353, 2002.

17. D. Avci, J. Nobles, L. J. Mathias, Synthesis and Photopolymerization Kinetics of New Flexible Diacrylate and Dimethacrylate Crosslinkers Based on C18 Diacid, *Polymer*, 44, 963, 2003.

18. D. Avci, A. Ziylan Albayrak, Synthesis and Copolymerization of New Phosphorus-containing Acrylates, *J. Polym. Sci. Polym. Chem. Ed.*, 41, 2207, 2003.

19. D. Avci, L. J. Mathias, Synthesis and Photopolymerizations of New Hydroxyl-containing Dimethacrylate Crosslinkers, *Polymer*, 45, 1763, 2004.

20. A. Ziylan Albayrak, D. Avci, Novel Phosphorus-containing Cyclopolymers from Ether Dimer of tert-Butyl α-hydroxymethyl Acrylate, *Des. Mon. Polym.*, 7(3), 291, 2004.

21. H. Günaydın, S. Salman, N. Senyurt, D. Avci, V. Aviyente, Modelling the Free Radical Polymerization of Acrylates, *Inter. J. of Quant. Chem.*, 103, 176, 2005.

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23. B. Ayfer, B. Dizman, M. O. Elasri, L. J. Mathias, D. Avci, Synthesis and Antibacterial Activities of New Quaternary Ammonium Monomers, *Des. Mon. Polym.*, 8(5), 437, 2005.

24. D. Avci, L. J. Mathias, Synthesis and Photopolymerizations of Phosphate-containing Acrylate/(di)methacrylate Monomers from 3-(acryloyloxy)-2-hydroxypropyl Methacrylate, *Polym. Bull.*, 54, 11, 2005.

25. B. Yagcı, B. Ayfer, A. Ziylan Albayrak, D. Avci, Synthesis and Photopolymerizations of New Crosslinkers for Dental Applications, *Macromol. Mat. Eng.*, 291, 336, 2006.

26. G. Sahin, A. Ziylan Albayrak, Z. Saraylı, D. Avci, Synthesis and Photopolymerization of New Dental Monomers from o-Hydroxyaryl Phosphonates, *J. Polym. Sci.: Polym. Chem.*, 44, 6775, 2006.

27. I. Degirmenci, D. Avci, V. Aviyente, K. Van Cauter, V. Van Speybroeck, M. Waroquier, Density Functional Theory Study of Free Radical Polymerization of Acrylates and Methacrylates: Structure-Reactivity Relationship, *Macromolecules*, 40, 9590, 2007.

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31. G. Sahin, A. Z. Albayrak, Z. S. Bilgici, D. Avc**i**, Synthesis and Evaluation of New Dental Monomers with Both Phosphonic and Carboxylic Acid Functional Groups, *J. Polym. Sci. Polym. Chem. Ed.*, 47**,** 7, 1953, 2009.

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45. O. Karahan, D. Karaca Balta, N. Arsu, D. Avci, Synthesis and Evaluations of Novel Photoinitiators With Side-Chain Benzophenone, Derived From Alkyl α-Hydroxymethacrylates, *J. Photochem. Photobiol. A: Chem.*, 274, 43, 2014.

46. A. Altin, B. Akgun, Z. Sarayli Bilgici, S. B. Turker, D. Avci, Synthesis, Photopolymerization, and Adhesive Properties of Hydrolytically Stable Phosphonic Acid-Containing (Meth)Acrylamides, *J. Polym. Sci. Part A: Polym. Chem.,* 52, 511, 2014.

47. Z. Sarayli Bilgici, O. Buyukgumus, A. Altin, D. Avci, Synthesis and Polymerizations of Novel Bisphosphonate-Containing Methacrylates Derived From Alkyl α-Hydroxymethacrylates, *Polym. Int.*, 63, 427, 2014.

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56. M. N. Guven, M. S. Altuncu, F. Demir Duman, T. N. Eren, H. Yagci Acar, D Avci, Bisphosphonate-Functionalized Poly (β-Amino Ester) Network Polymers, *J. Biomed. Mater. Res. A,* 105, 1412, 2017.

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60. T. N. Eren, J. Lalevee, D. Avci, Bisphosphonic Acid-Functionalized Water-Soluble Photoinitiators, *Macromol. Chem. Phys.,* 220, 1900268, 2019.

61. S. Altuncu, F. Demir Duman, U. Gulyuz, H. Yagci Acar, O. Okay, D. Avci, Structure-Property Relationships of Novel Phosphonate-Functionalized Networks and Gels of Poly(β-Amino Esters), *Eur. Polym. J.*, 113, 155, 2019.

62. B. Bingol, S. Altuncu, F. Duman, A. Ak, U. Gulyuz, H. Yagci Acar, O. Okay, D**.** Avci, One-Step Injectable and Bioreducible Poly(β-Amino Ester) Hydrogels as Controlled Drug Delivery Platforms, *Applied Polymer Materials*, 1, 1724, 2019**.**

63. B. Bingol, S. Cinar, T. Bal, C. Oran, S. Kizilel, N. Apohan, D. Avci, Stimuli-Responsive Poly(Hydroxyethyl Methacrylate) Hydrogels from Carboxylic Acid-Functionalized Crosslinkers, *J. Biomed. Mater. Res. A*, 107A, 2013, 2019.

64. T. N. Eren, J. Lalevee, D. Avci, Water Soluble Polymeric Photoinitiator for Dual-curing of Acrylates and Methacrylates, *J. Photochem. Photobiol. A*, 389, 112288, 2020.

65. T. N. Eren, T. Gencoglu, M. Abdallah, J. Lalevee, D. Avci, A Water Soluble and Highly Reactive Bisphosphonate Functionalized Thioxanthone-based Photoinitiator, *Eur. Polym. J.*, 135, 109906, 2020.

66. S. Altuncu, E. Akyol, M. N. Guven, G. Demirci, H. Yagci Acar, D. Avci, Phosphonic Acid-Functionalized Poly(amido Amine) Macromers for Biomedical Applications, *J. Biomed. Mater. Res. A,* 1-11, 2020.

67. M. N. Guven, G. Demirci, S. Altuncu, U. Gulyuz, O. Okay, H. Yagci Acar, D. Avci, Alendronate-Functionalized Poly(amido Amine) Cryogels of High-Toughness for Biomedical Applications, *Polymer*, 190, 122248, 2020.

68. G. B. Ozaydin, D. Avci, V. Aviyente**,** Binding of Self-Etching Monomers to Hydroxyapatite: A Computational Approach, *Eur. Polym. J.*, 122, 109344, 2020.

69. T. N. Eren, N. Kariksiz, G. Demirci, D. Tuncel, A. N. Ökte, H. Yagci Acar, D. Avci, Irgacure 2959-Functionalized Poly(ethyleneimine)s as Improved Photoinitiators: Enhanced Water Solubility, Migration Stability and Visible-light Operation, *Polym. Chem.*, 12, 2772, 2021.

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75. B. Balaban, N. Kariksiz, T. N. Eren, D. Avci, Cyclopolymerizable and Cyclopolymeric Photoinitiators from Diallyl Amine and α-Hydroxy Ketones, *Polym. Chem.,* 13, 5094, 2022.

BOOK CHAPTERS

T. N. Eren, D. Avci, Monomeric and Polymeric Photoinitiators, *Photopolymerisation Initiating Systems*, Editors: J. P. Fouassier, J. Lalevée, Royal Society of Chemistry, UK 2018.

TEACHING ACTIVITY

Chem 103 General Chemistry I
Chem 104 General Chemistry II
Chem 201 Organic Chemistry
Chem 241 Organic Chemistry for Engineers
Chem 435 Introduction to Polymer Science and Technology
Chem 442 Qualitative Organic Analysis
Chem 487 Polymer Chemistry Laboratory
Chem 538 Polymer Applications