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EDUCATION

- Ph.D.** Middle East Technical University Department of Chemistry
Thesis Title: Synthesis and Characterizations of Alkaline, Alkaline Earth and Transition Metal Borophosphate Compounds
Supervisor: Prof. Dr. Meral Kızılyallı, Prof. Dr. Co-Supervisor: Rudiger Kniep
- M.S.** Middle East Technical University Department of Chemistry
Thesis Title: Rare-Earth Metal Borophosphates
Supervisor: Prof. Dr. Meral Kızılyallı, Prof. Dr. Co-Supervisor: Rudiger Kniep
- B.S.** Middle East Technical University Faculty of Education
Chemistry Education

Professional Experience

- 2001/5-2002/9 Post-doc, University of California at Santa Barbara, California, USA
2002/9-2004/5 Instructor, Department of Chemistry at METU
2004/5-2009/6 Assistant Professor, Department of Chemistry at METU
2009/6-2015/10 Associate Professor, Department of Chemistry at METU
2015/10- Professor Doctor, Department of Chemistry at METU

Awards and Honors

TUBITAK NATO A2 Scholarship.

Max-Planck Institute für Chemische Physik fester Stoffe, Dresden, Germany Scholarship for visiting scientist.

Universität Halle Wittenberg, Department of Chemistry, Halle, Germany Scholarship for visiting scientist.

Mustafa Parlar En İyi Tez Ödülü, Burcu Ardıçoğlu

Mustafa Parlar En İyi Tez Ödülü, Zeynep Özdemir

Mustafa Parlar En İyi Tez Ödülü, Volkan Değirmenci

M.S. Theses Supervised

1. Mehmet Kayhan, Effects of Synthesis and Doping Methods on Thermoluminescence Glow Curves of Manganese Doped Lithium Tetraborate, 2009.
2. Filiz Sevimli, Surface Functionalization of Sba-15 Particles for Amoxicillin Delivery, 2011.
3. Cansın Badan, Microwave Assisted Synthesis of Rare Earth Ions Doped Lanthanum orthoborate, Their Characterizations and Investigations of Luminescence Properties, 2012.
4. Gamze Gezer, Surface Functionalization of SBA-15 Particles For Celecoxib Delivery, 2013.
5. Şahika Günaydın, Inclusion of Celecoxib in MCM – 41 Mesoporous Silica: Drug Loading and Release Property, 2014.
6. Muzaffer Gencay Çelik, Synthesis of Lithium Triborate and Lithium Tetraborate Compounds Doped by Metal Ions for Thermoluminescence Measurements, 2016.
7. Zeynep Seda Eren, Polyethyleneimine Functionalized Mesoporous Silica Materials For Poorly Water Soluble Drug Delivery, 2016.
8. Saeed Vahed Qaramaleki, Synthesis of Metal Ion Doped La, Y and Gd Orthoborate; Their Photoluminescence Measurement and LED Manufacture, 2016.
9. Metehan Severoğlu, Microwave Assisted Solid State Synthesis of Rare Earth Ions Doped LaBO₃, YBO₃ and GdBO₃, Their Characterizations and Investigations of Luminescence Properties, 2016.
10. Ali Farid, Mesoporous Silica Particles for Enhancement of Solubility of Poorly Water-Soluble Drug, 2017.
11. Özde Ceren Abacı, Ce³⁺/Dy³⁺ and Eu³⁺/Dy³⁺ Co-doped Lanthanum Orthoborate: Synthesis, Characterizations and Luminescence Enhancements, 2017.
12. Pelin Akman, Luminescent Mesoporous Silica Nanoparticles For Celecoxib Delivery, ongoing.

Ph.D. Theses Supervised

- Semih Seyyidođlu, Synthesis and Characterizations of Rare Earth Metal Borate Compounds, 2009.
- Muzaffer Gencay elik, Synthesis and Characterizations of Borate Compounds and Investigations of Their Optical Properties, ongoing.
- Metehan Severođlu, Microwave Assisted Synthesis of Different Types of Clinker, Their Characterization and Investigations of Mechanical Properties, ongoing.

Thesis Co-Supervised

- Burcu Ardiođlu, 2005, Synthesis of Rare Earth Metals Doped Lithium Triborate.
- Burcu Aka, 2006, Synthesis and Characterizations of Co-Pb/SBA-15 Mesoporous Catalysts.
- Esra Eker, 2006, Synthesis and Characterizations of Lanthanum Borate Compound.
- Esin Pekpak, 2009, Synthesis and Characterizations of Lithium Tetraborate Doped with Metals.
- Zeynep zdemir, 2005, Thermoluminescence Properties of Metal Doped Lithium Triborate.
- Volkan Deđirmenci, 2007, Methane Activation on Sulphated Zirconium/SBA-15 Catalyst.
- Tolga Depi, 2009, Synthesis and Characterizations of New Lithium Borate Compounds for Dosimetric Applications.
- Levent S. İlkey, 2009, Synthesis and Characterization of Metal Doped Strontium Pyrophosphate and Their Glow Curves.
- Mukaddes Can, 2011, Production of Hydrogen from Hydrocarbons by Using Mesoporous Catalysts.
- Nima Sohrabnia, Investigation of Carboranethiol Self Assembled Monolayers on Metal Surfaces, 2016.

Project Activities

- Synthesis and Characterizations of Novel Boron Compounds, Characterizations, Crystal Structures, Materials Properties and Technological, DPT Project, BAP-0103-DPT-2003k120920-09, **Research Associate**, 2003.
- Synthesis of Mesoporous Nanomaterials: Tailoring Particle Size and Pore Diameter, TÜBİTAK-Carrier Project, **Principal Investigator**, 104T181, 2005.
- Development of Boron Containing Dosimetric Materials, National Boron Institute, BOREN-2006-G-09, **Principal Investigator**, 2006.
- Investigation of Surface Acidities of Mesoporous Materials Spectroscopically, TÜBİTAK, **Principal Investigator**, 107T222, 2007.
- TUD – METU Research and Educational Network on Nanomaterials and Nanotechnology for Renewable Resources , INTEN-C, TUBİTAK, 107M447, **Research Associate**, 2008.
- Development of Boron Containing Dosimetric Materials and Technological Applications

BOREN–2008–B–0201, **Principal Investigator**, 2009.

- Synthesis and Characterizations of Mesoporous Silica and TiO₂ for Photocatalytic Activities TÜBİTAK, 109T009, **Principal Investigator**, 2009.
- Luminescence Properties of Various Metal Ion Doped Borate Compounds and Investigation of Carboranethiol Films on Metal Surfaces, TÜBİTAK-1003, 213M182, **Principal Investigator**, 2013.
- Mesoporous Silica Particles for Enhancement of Solubility of Poorly Water-Soluble Drug, TÜBİTAK-1002, 114Z719, **Principal Investigator**, 2014.
- Investigation of Luminescence Properties of Rare Earth Element Ions Co-Doped Lanthanum and Gadolinium Orthoborate Compounds, TÜBİTAK-1002, 216Z038, **Principal Investigator**, 2017.

Other Professional Activities

- Assistant Chairman of Department of Chemistry, METU, January 2010- January 2013.
- Member of Faculty Academic Board October, 2009- October 2012.
- Academic Chairman of National Chemistry Olimpiad Team, August 2010- August 2013.

Refereed Publications

39. Celik M.G., **Yilmaz A.**, Yazici A.N., “Synthesis and Thermoluminescence Characterization of Lithium Tetraborate (Li₂B₄O₇) Doped with Copper and Silver Metals” *Radiation Measurements*, 102, 16-26, (2017).

38. Yavuz, A., Sohrabnia, N., **Yilmaz A.**, Danisman M.F., “Mixed carboranethiol self-assembled monolayers on gold surfaces” *Applied Surface Science*, 413, 233-241, (2017).

37. Eren Z.S., Gezer G., Tuncer S., Yildirim L.T., Banerjee S., **Yilmaz A.**, “Improved Solubility of Celecoxib by Inclusion in SBA-15 Mesoporous Silica: Drug Loading in Different Solvents and Release” *Microporous and Mesoporous Materials*, 235, 211-223, (2016).

36. Mete E., **Yilmaz A.**, Danışman M.F., “A van der Waals Density Functional Investigation of Carboranethiol Self-Assembled Monolayer on Au(111)”, *Physical Chemistry Chemical Physics*, 18, 12920-12927, (2016).

35. Günaydın Ş., **Yilmaz A.**, “Inclusion of Celecoxib in MCM-41 Mesoporous Silica: Drug Loading and Release Property”, *Turkish Journal of Chemistry*, 39, 317-333 (2015).

34. Ilkay L.S., Ozbayoglu G., **Yilmaz A.**, “Synthesis, Characterizations and Investigation of Thermoluminescence Properties of Strontium Pyrophosphate Doped With Metals” *Radiation Physics and Chemistry*, 104, 55-60 (2014).

33. Badan C., Esentürk O., **Yilmaz A.**, “New Synthesis Techniques of Eu³⁺ Doped Lanthanum

Orthoborates, Their Characterizations and Luminescent Properties” *Solid State Sciences*, 14, 1710-1716 (2012).

32. Sevimli F., **Yilmaz A.** “Surface functionalization of SBA -15 particles for amoxicillin delivery”, *Microporous and Mesoporous Materials*, 158, 281–291, (2012).

31. Depci T. Özbayoğlu G., **Yilmaz A.**, “Synthesis and thermoluminescence properties of rare earth oxides (Y, Ce-Lu) doped lithium tetraborate”, *Journal Of Rare Earths*, 29,618-622, (2011).

30. Kayhan M., **Yilmaz A.**, “Effects of Synthesis, Doping Methods and Metal Content on Thermoluminescence Glow Curves of Lithium Tetraborate”, *Journal of Alloys and Compounds*, 509, 7819-7825, (2011).

29. Değirmenci V., Uner D., Cinlar B., Shanks B.H., **Yilmaz A.**, van Santen R., Hensen E.J.M., “Sulfated Zirconia Modified SBA-15 Catalysts for Cellobiose Hydrolysis”, *Catalysis Letters*, 141, 33-42, (2011).

28. Pekpak E., **Yilmaz A.**, Ozbayoglu G., “The Effect of Synthesis and Doping Procedures on Thermoluminescent Response of Lithium Tetraborate”, *Journal of Alloys and Compounds*, 509, 2466–2472, (2011).

27. Dogan M., **Yilmaz A.**, Bayramli E. “Effect of boron containing materials on flammability and thermal degradation of polyamide-6 composites containing melamine cyanurate”, *Polymers for Advanced Technologies*, 22, 560-566, (2011).

26. Pekpak E., **Yilmaz A.**, Ozbayoglu G., “An Overview on Preparation and TL Characterization of Lithium Borates for Dosimetric Use”, *The Open Mineral Processing Journal*, 3, 14-24, (2010).

25. Dogan M., **Yilmaz A.**, Bayramli E., “Synergistic Effect of Boron Containing Substances on Flame Retardancy and Thermal Stability of Intumescent Polypropylene Composites”, *Polymer Degradation and Stability*, 95, 2584-2588, (2010).

24. Depci T. Ozbayoglu G., **Yilmaz A.** “Comparison of Different Synthesis Methods to Produce Lithium Triborate and Their Effects on Its Thermoluminescent Property” *Metalurgical and Materials Transaction A*, 41, 2584-2594, (2010).

23. Yazici N.A., Seyyidoglu S., Toktamis H., **Yilmaz A.** “Thermoluminescence properties of $\text{Sr}_2\text{P}_2\text{O}_7$ doped with copper and some rare earth elements”, *Journal of Luminescence*, 130, 1744-1749, (2010).

22. Ozbayoglu G., **Yilmaz A.**, Yazici N. “Utilization of Lithium Borate Compounds in Medical Dosimetric Materials”, *Handbook on Borates: Chemistry, Production and Applications*, ISBN: 978-1-60741-822-1, Nova Publisher.

21. Degirmenci V., **Yilmaz A.**, Uner D. “Selective methane bromination over sulfated zirconia in SBA-15 catalysts”, *Catalysis Today*, 142, 30-33, (2009).

20. Depci T., Ozbayoglu G., **Yilmaz A.** Yazıcı N. “The thermoluminescent Properties of Lithium Triborate, LiB_3O_5 activated by aluminium”, *Nuclear Instruments and Methods in Physical Research B*, B266, 755-762, (2008).
19. Akca B., Guner O. , Can M., **Yilmaz A.**, Uner D. “ Oxidation states and the acidity of ordered arrays of Co-Pb mixed oxide nanoparticles templated in SBA15” *Topics in Catalysis*, 49, 187-192, (2008).
18. Degirmenci V., Erdem O. F., Ergun O., **Yilmaz A.**, Michel D., Uner D. “Synthesis and NMR characterization of group IVB metal oxides incorporated in SBA-15” , *Topics in Catalysis*, 49, 204-208, (2008).
17. Seyyidoglu S., Ozenbaş M., **Yilmaz A.** “Investigation of Solid State Synthesis and Characterizations of Novel Sodium Rare-Earth Oxyphosphates”, *Turkish Journal of Chemistry*, 32, 1-20, (2008).
16. Depci T., Ozbayoglu G., **Yilmaz A.**, “The effect of different starting materials on the synthesis of lithium triborate”, *Physicochemical Problems of Mineral Processing*, 41, 101-105, (2007).
15. Ergun O., Karşlıoglu O., **Yilmaz A.**, Uner D. “Preparation and Charaterization of Ordered TiO_2 Photocatalysts: Films and Mesoporous Structures”, *Turkish Journal of Chemistry*, 31, 501-508, (2007).
14. Degirmenci V., Erdem O.F., **Yilmaz A.** , Michel D., Uner D. “Sulfated zirconia in SBA-15 structures with strong Bronsted acidity as observed ^1H MAS NMR spectroscopy”, *Catalysis Letters*, 115,1-2, 79-85, (2007).
13. Ozdemir Z., Ozbayoglu G., **Yilmaz A.** “Investigation of thermoluminescence properties of metal oxide doped lithium triborate “*Journal of Material Science*, 42, 8501-8508, (2007).
12. Seyyidoglu S., Ozenbaş M., Yazıcı N., **Yilmaz A.** “Investigation of Solid Solution of ZrP_2O_7 - $\text{Sr}_2\text{P}_2\text{O}_7$ “, *Journal of Material Science*, 42, 6453-6463, (2007).
11. Ardıçoglu B., Ozbayoglu G., Ozdemir Z., **Yilmaz A.**, “Production and Identification of Rare-earth doped Lithium Triborate”, *Journal of Alloys and Compounds*, 418, 1-2, 77-79, (2006).
10. **Yilmaz A.**, Camurlu P., Tatar L., Kısakurek D., Ulku D., “Synthesis, Crystal Structure and Spectral Analysis of Diaquatetrakis(N-methylimidazole)Ni(II)di(2,4,6-tribromophenol), $\text{Ni}(\text{H}_2\text{O})_2(\text{C}_3\text{N}_2(\text{CH}_3))_4 \cdot 2(\text{C}_6\text{H}_3\text{Br}_3\text{O})$ “, *Crystal Research and Technology*, 41, 8, 829-835, (2006).
9. Degirmenci V., Uner D., **Yilmaz A.**, “Methane to higher hydrocarbons via halogenation”, *Catalysis Today*, 106, 252-255, (2005).
8. **Yilmaz A.**, Zhou X.P., Lorkovic I.M., Yilmaz G.A., Laverman L., Weiss M., Sun S., Schaefer D., Sherman J.H., McFarland E.W., Ford P.C., Stucky G.D., “Bromine Mediated Partial Oxidation of

Ethane Over Nanostructured Zirconia Supported Metal-Oxide/Bromide “ *Microporous and Mesoporous Materials*, 79, 205-214, (2005).

7. Yilmaz A., Tatar L., Bu X., Kizilyalli M., Stucky G.D., “New Zeotype Borophosphates with Chiral Tetrahedral Framework Topology: $(\text{H})_{0.5}\text{M}_{1.25}(\text{H}_2\text{O})_{1.5}\text{BP}_2\text{O}_8 \cdot \text{H}_2\text{O}$ (M= Co(II) and Mn(II))” *Crystal Research and Technology*, 40, 6, 579-585, (2005).

6. Camurlu P., Yilmaz A., Tatar L., Kısakürek D., Ülkü D., “Synthesis, crystal structures and characterizations of new transition metal compounds of bromophenols: Bis(2,4,6-tribromophenolato)di(N-methyl imidazole)M(II) (M=Co, Cu)”, *Crystal Research and Technology*, 40, 3, 271-276, (2005).

5. Lorkovic I.M., Yilmaz A., Yilmaz G.A., Zhou X.P., Laverman L.E., Sun S., Schaefer D.J., Weiss M., Noy M.L., Cutler C.I., Sherman J.H., McFarland E.W., Stucky G.D., Ford P.C., “A novel integrated process for the functionalization of methane and ethane: Bromine as mediator”, *Catalysis Today*, 98, 1-2, 317-322, (2004).

4. Zhou X.P., Yilmaz A., Yilmaz G.A., Lorkovic I.M., Laverman L.E., Weiss M., Sherman J.H., McFarland E.W., Stucky G.D., Ford P.C., “An Integrated Process for Partial Oxidation of Alkanes” *Chemical Communications*, 2294-2295, (2003).

3. Yilmaz A., Bu X., Kizilyalli M., Kniep R., Stucky G.D., “Cobalt Borate Phosphate; $\text{Co}_3[\text{BPO}_7]$, Synthesis and Characterization” *Journal of Solid State Chemistry*, 156, 281-285, (2001).

2. Yilmaz A., Bu X., Kizilyalli M., Stucky G.D., “ $\text{Fe}(\text{H}_2\text{O})_2\text{BP}_2\text{O}_8 \cdot \text{H}_2\text{O}$, a First Zeotype Ferriborophosphate with Chiral Tetrahedral Framework Topology” *Chemistry of Materials*, 12: (11) 3243-3245, (2000).

1. Hauf C., Yilmaz A., Kizilyalli M., Kniep R. “Borophosphates: Microwave-Assisted and Hydrothermal Synthesis of $\text{Na}_5[\text{B}_2\text{P}_3\text{O}_{13}]$ ” *Journal of Solid State Chemistry*, 140, 154-156, (1998).

PATENTS:

1. Yilmaz; Aysen, Yilmaz; Gurkan Atinc, Lorkovic; Ivan M., Stucky; Galen D., Ford; Peter C., McFarland; Eric, Sherman; Jeffrey H.

Integrated process for synthesizing alcohols, ethers, aldehydes, and olefins from alkanes, United States Patent, 6,713,655, March 30, 2004.

2. Zeynep Özdemir, Tolga Depci, Gülhan Özbayoğlu, Ayşen Yılmaz
Preparation method of thermoluminescent metal doped lithium triborate (LiB_3O_5).

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