ÖZGE BALCI, PhD
Research Asst. Prof.

PERSONAL DETAILS

Date and Place of Birth: 1985, İstanbul
Address: Koç University, College of Sciences, Rumelifeneri Yolu, 34450 Sarıyer, İstanbul/Turkey
Phone: +90 212 338 1566, **E-mail:** obalci@ku.edu.tr

EDUCATION

Ph.D., Metallurgical and Materials Engineering, Istanbul Technical University, 2015.
Ph.D. Researcher, Institute of Complex Materials, IFW Dresden, Leibniz Institute for Solid State and Materials Research, Germany, 2013.
M.Sc., Production Metallurgy and Technologies Engineering, Istanbul Technical University, 2010.
B.Sc., Metallurgical and Materials Engineering, Istanbul Technical University, 2008.

AREA OF INTERESTS

Boron based advanced materials and applications, boron compounds, functional boride nanoparticles, boron based nanocatalysts, synthesis of inorganic materials, composite materials, powder metallurgy, materials characterization

SHORT INFORMATION

Özge Balcı completed her PhD in Metallurgical and Materials Department at İstanbul Technical University in 2015 on the mechanochemical synthesis, sintering and characterization techniques of metal borides. During her PhD studies, she continued her studies on the development of novel composite materials by powder metallurgy techniques (mechanical alloying, sintering) at IFW Dresden, Germany. Her postdoctoral research studies at Koç University between 2015-2018 included the synthesis and applications of advanced boron compounds. She worked as a coordinator of Koç University Akkim Boron-Based Materials and High Technology Chemicals Research and Application Center between 2017-2019. She has been affiliated as Research Assistant Professor since September 2019 in Koç University, College of Sciences. She has stayed long periods as a visiting scientist at Max Planck Institute in Dresden, Germany around July-August for three consecutive years from 2017 through 2019, as well as February 2020. Since 2017, her collaboration with the Max Planck institute has been continued on the topic of EBSD analysis and microstructural mechanisms of metal boride materials. Her current research interests include the synthesis of functional boride nanoparticles, investigation of magnetic and catalytic properties of binary/ternary boride compounds, and development and characterization of novel micro/nanocomposites. She is author/co-author of 39 papers cited in Web of Science and 1 patent with about 400 citations to her work.

PROFESSIONAL EXPERIENCE

Research Assistant Professor, Koç University, College of Sciences, İstanbul, Turkey, September 2019 – current.

Executive Council Member, Koç University Boron and Advanced Materials Application and Research Center (KUBAM), Turkey, October 2019-current.

Coordinator, Koç University Akkim Boron-Based Materials and High Technology Chemicals Research and Application Center (KABAM), Turkey, July 2017 – September 2019.

Postdoctoral Researcher, Koç University, Department of Chemistry, Turkey, February 2016 – September 2019.

Visiting Scientist, Max Planck Institute for Chemical Physics of Solids, Dresden, Germany, August-September 2017 / August-September 2018 / July-August 2019 / February 2020.

Instructor (Part-time), İstanbul Bilgi University, Faculty of Engineering and Natural Sciences, 2016-2017, 2019.

Researcher, IFW Dresden, Leibniz Institute for Solid State and Materials Research, Institute of Complex Materials, Dresden, Germany, 2012 – 2013.

Research Associate, İstanbul Technical University, Department of Metallurgical and Materials Engineering, Turkey, 2009 – 2015.

TEACHING EXPERIENCE

Instructor of ***Material Science for Engineers***, Faculty of Engineering and Natural Sciences, İstanbul Bilgi University.

2019 (Spring), MECA 205, (Students: 71, Lecture + Class (h): 3+1)
2017 (Spring), ENGR 205, (Students: 36, Lecture (h): 3)
2016 (Fall), ENGR 205 (Students: 95, Lecture (h): 3)

Advisor for MSc and undergraduate students (Independent study lectures), ***Co-Advisor*** for a PhD Student, Graduate School of Sciences and Engineering, Koç University.

REWARDS, CERTIFICATES, ACHIEVEMENTS

Scientific Research Scholarship, German Academic Exchange Service, DAAD, 2012.

Best Poster Awards,

3th International Ceramic Glass Porcelain Enamel Glaze and Pigment Congress, Eskişehir, Turkey, 2014.
12th International Symposium on Novel and Nano Materials, İstanbul, Turkey, 2012.
12th International Workshop on Nanoscience and Nanotechnology, Varna, Bulgaria, 2010.

Young Scientist Award, 14th International Metallurgy and Materials Congress, İstanbul, Turkey, 2008.

Certificate of Outstanding Contribution in Reviewing, *Journal of Alloys and Compounds* / *Advanced Powder Technology*, Elsevier Reviewer Recognition, 2016.

Training Certifications for TGA-DSC, FT-IR, XRD, GC-MS, UV-VIS, Heat Microscope, 2013-2014.

Experience in FactSage™ Thermodynamical Software, 2012-current.

Deutsches Sprachdiplom, Staendige Konferenz der Kultusminister der Laender in der Bundesrepublik Deutschland, 2003.

PUBLICATION SUMMARY

Author of 39 International Publications (SCI, SCIE Index, cited in Web of Science)

Number of Citations: 240 (Web of Science), 401 (Google Scholar)

h-index: 9 (Web of Science), 12 (Google Scholar)

Inventor of a Granted Patent on the production of elemental boron and advanced ceramic powders

Author of 57 International Conference Abstracts (Oral/Poster), 3 Invited Talks.

Journal Article Reviewer: *Journal of Alloys and Compounds, Advanced Powder Technology, Journal of the American Ceramic Society, Acta Materialia, Materials Characterization, Powder Technology, Ceramics International, Particulate Science and Technology, Construction and Building Materials, Journal of Rare Earths, Journal of Boron etc.*

Selected Publications on "Boron and Advanced Materials" Research

Peer-Reviewed Journal Articles (SCI Index)

1) Khoshsima S., Altıntaş Z., Burkhardt U., Schmidt M., Prashanth K.G., Somer M., **Balcı Ö.** (2020). CoB-TiB_2 crystalline powders: Synthesis, microstructural analysis and their utilization as reinforcement agent, *Advanced Powder Technology,* Accepted Manuscript.
2) Maity T., **Balcı Ö.,** Gammer C., Ivanov E., Eckert J., Prashanth K.G. (2020). High pressure torsion induced lowering of Young's modulus in high strength TNZT alloy for bio-implant applications, *Journal of the Mechanical Behavior of Biomedical Materials,* 108, 103839.
3) Khoshsima S., Altıntaş Z., Schmidt M., Bobnar M., Somer M., **Balcı Ö.** (2019). Crystalline CoFeB nanoparticles: Synthesis, microstructure and magnetic properties, *Journal of Alloys and Compounds,* 805, 471-482.
4) **Balcı Ö.**, Ağaoğulları, D., Suryanarayana C., Duman İ., Öveçoğlu, M. L. (2019). Synthesis and characterization of vanadium boride powders and their sintered bodies, *Materials Research Express*, 6, 096542.
5) **Balcı Ö.**, Prashanth K.G., Scudino S., Somer M., Eckert J. (2019). Powder metallurgy of Al-based composites reinforced with Fe-based glassy particles: Effect of microstructural modification, *Particulate Science and Technology*, 37(3), 286-291.
6) Ağaoğulları D., **Balcı Ö.,** Akçamlı N., Duman İ., Öveçoğlu M.L. (2019). Effects of different milling conditions on the properties of lanthanum hexaboride nanoparticles and their sintered bodies, *Ceramics International*, 45, 18236-18246.
7) Ağaoğulları D., **Balcı Ö.,** Akçamlı N., Suryanarayana C., Duman İ., Öveçoğlu M.L. (2019). Mechanochemical synthesis and consolidation of nanostructured cerium hexaboride, *Processing and Application of Ceramics,* 13 (1), 32-43.
8) **Balcı Ö.,** Burkhardt U., Schmidt M., Hennicke J., Yağcı M.B., Somer M. (2018). Densification, microstructure and properties of TiB_2 ceramics fabricated by spark plasma sintering, *Materials Characterization*, 145, 435-443.
9) **Balcı Ö.**, Ağaoğulları, D., Gökçe H., Öveçoğlu, M. L, Somer M. (2018). Effect of cryomilling on matrix/reinforcement interfaces and properties of Al-TiB_2 composites, *Journal of Alloys and Compounds*, 757, 393-402.
10) Maity T., Prashanth K.G., **Balcı Ö.,** Wang Z., Jia Y.D., Eckert J. (2018). Plastic deformation mechanisms in severely strained eutectic high entropy composites explained via strain rate sensitivity and activation volume, *Composites Part B,* 150, 7-13.
11) Maity T., Prashanth K.G., **Balcı Ö.,** Kim J.T., Schöberl T., Wang Z., Eckert J. (2018). Influence of severe straining and strain rate on the evolution of dislocation structures during micro-/nanoindentation in high entropy lamellar eutectics, *International Journal of Plasticity,* 109, 121-136.
12) Ovalı D., **Balcı Ö.,** Ağaoğulları D., Öveçoğlu M.L., (2018). Effects of oxide particles on the microstructural and mechanical properties of W-Ni-WB composites, *Particulate Science and Technology,* DOI: 10.1080/02726351.2018.1539798.
13) Ağaoğulları D., **Balcı Ö.,** Öveçoğlu M.L., Duman İ., (2018). Effects of milling parameters on the microstructural and thermal properties of nanocrystalline lanthanum hexaboride powders, *Journal of Australian Ceramic Society*, 54(1), 2018, 177-190.
14) Akçamlı N., Ağaoğulları D., **Balcı Ö.,** Öveçoğlu M.L., Duman İ., (2018). Room-temperature mechanochemical synthesis and consolidation of nanocrystalline HfB_2-HfO_2 composite powders, *Journal of Ceramic Science and Technology*, 9(2), 101-118.
15) İpekçi M., Acar S., Elmadağlı M., Hennicke J., **Balcı Ö.**, Somer M. (2017). Production of TiB_2 by SHS and HCl leaching at different temperatures: Characterization and investigation of sintering behavior by SPS, *Ceramics International*, 43, 2039-2045.
16) Ağaoğulları D., **Balcı Ö.,** Öveçoğlu M.L. (2017). Effect of milling type on the microstructural and mechanical properties of W-Ni-ZrC-Y_2O_3 composites, *Ceramics International*, 43, 7106-7114.

17) Akçamlı N., Ağaoğulları D., **Balcı Ö.,** Öveçoğlu M.L., Duman İ., (2017). Synthesis of bulk nanocrystalline HfB_2 from $HfCl_4$-$NaBH_4$-Mg ternary system, *Journal of Materials Science*, 52(21), 12689-12705.
18) Ağaoğulları D., **Balcı Ö.,** Öveçoğlu M.L., Duman İ., (2017). Microstructural evaluation of ZrB_2/ZrO_2 ceramic powders prepared by milling-assisted magnesiothermic reduction of oxide raw materials, *KONA Powder and Particle Journal*, 34, 183-196.
19) **Balcı Ö.,** Ağaoğulları D., Muhaffel F., Öveçoğlu M. L, Çimenoğlu H., Duman İ. (2016). Effect of sintering techniques on the microstructure and mechanical properties of niobium borides, *Journal of the European Ceramic Society*, 36(13) 3113-3123.
20) Akçamlı N., Ağaoğulları D., **Balcı Ö.,** Öveçoğlu M. L, Duman İ. (2016). Mechanical activation-assisted autoclave processing and sintering of HfB_2-HfO_2 ceramic powders, *Ceramics International*, 42(13), 14642-14655.
21) Akçamlı N., Ağaoğulları D., **Balcı Ö.,** Öveçoğlu M. L and Duman İ. (2016). Synthesis of triclinic and hexagonal $SmBO_3$ powders by mechanically activated annealing of Sm_2O_3 and B_2O_3 blends, *Ceramics International*, 42(8), 10045-10057.
22) **Balcı Ö.,** Ağaoğulları D., Öveçoğlu M. L, Duman İ. (2016). Synthesis of niobium borides by powder metallurgy methods using Nb_2O_5, B_2O_3 and Mg blends, *Transactions of Nonferrous Metals Society of China*, 26, 747-758.
23) Akçamlı N., Ağaoğulları D., **Balcı Ö.,** Öveçoğlu M. L, Duman İ. (2016). Synthesis of HfB_2 powders by mechanically activated borothermal reduction of $HfCl_4$, *Ceramics International*, 42(3), 3797-3807.
24) Ağaoğulları D., **Balcı Ö.,** Öveçoğlu M. L., Duman İ. (2016). Preparation of LaB_6 Powders via Calciothermic Reduction using Mechanochemistry and Acid Leaching, *KONA Powder and Particle Journal*, 33, 203-218.
25) Ağaoğulları D., **Balcı Ö.,** Öveçoğlu M. L., Suryanarayana C., Duman İ. (2015). Synthesis of Bulk Nanocrystalline Samarium Hexaboride, *Journal of the European Ceramic Society*, 35 (15), 4121-4136.
26) **Balcı Ö.,** Ağaoğulları D., Ovalı D., Öveçoğlu M. L, Duman İ. (2015). In Situ Synthesis of NbB_2–NbC Composite Powders by Milling-Assisted Carbothermal Reduction of Oxide Raw Materials, *Advanced Powder Technology*, 26, 1200-1209.
27) **Balcı Ö.**, Prashanth K. G., Scudino S., Ağaoğulları D., Duman İ., Öveçoğlu M. L., Uhlenwinkel V. and Eckert J. (2015). Effect of Milling Time and the Consolidation Process on the Properties of Al Matrix Composites Reinforced with Fe-Based Glassy Particles, *Metals*, 5, 669-685.
28) **Balcı Ö.,** Ağaoğulları D., Gökçe H., Duman İ., Öveçoğlu M. L. (2014). Influence of TiB_2 Particle Size on the Microstructure And Properties of Al Matrix Composites Prepared via Mechanical Alloying And Pressureless Sintering, *Journal of Alloys and Compounds*, 586, 578-584.
29) Ağaoğulları D., **Balcı Ö.,** Gökçe H., Öveçoğlu M. L., Duman İ. (2013). Comparative Investigations of the Activated Sintered W-1 wt.% Ni Composites Reinforced with Various Boride and Oxide Particles, *International Journal of Refractory Metals and Hard Materials*, 41, 577-584.
30) Ağaoğulları D., **Balcı Ö.,** Gökçe H., Duman İ., Öveçoğlu M. L. (2012). Synthesis of Magnesium Borates by Mechanically Activated Annealing, *Metallurgical and Materials Transactions A-Physical Metallurgy and Materials Science*, 43A (7), 2520-2533.
31) **Balcı Ö.,** Ağaoğulları D., Duman İ., Öveçoğlu M. L. (2012). Carbothermal Production of ZrB_2-ZrO_2 Ceramic Powders from ZrO_2–B_2O_3/B System by High-Energy Ball Milling and Annealing Assisted Process, *Ceramics International*, 38 (3), 2201-2207.
32) **Balcı Ö.,** Ağaoğulları D., Duman İ., Öveçoğlu M. L. (2012). Synthesis of CaB_6 Powders via Mechanochemical Reaction of Ca/B_2O_3 Blends, Powder *Technology*, 225, 136-142.
33) Ağaoğulları D., **Balcı Ö.,** Duman İ., Öveçoğlu M. L. (2011). Synthesis of α- and β-Rhombohedral Boron Powders via Gas Phase Thermal Dissociation of Boron Trichloride by Hydrogen, *Metallurgical and Materials Transactions B*, 42 (3), 568-574.

Selected Talks

1) **Balcı Ö.** (2019). New synthesis routes and properties of crystalline Co-M-B (M=Fe, Ti, Ni) nanoparticles, *Colloquium*, Invitation of Prof. Dr. Barbara Albert, Darmstadt Technical University, July 19, Darmstadt, Germany. **Colloquium Speaker.**
2) **Balcı Ö.** (2019). Solid state production of metal matrix composites reinforced with advanced ceramic compounds, *Workshop on Advances in Solid State Chemistry and Physics & Nanoscience for Energy Harvesting Technologies*, September 27-28, Tsukuba, Japan. **Invited Talk.**
3) **Balcı Ö.,** et al. (2019). Synthesis and magnetic properties of crystalline Co-Fe-B nanoparticles, *20th International Symposium on Boron, Borides and Related Materials, ISBB 2019*, September 22-27, Niigata, Japan. **Oral Presentation.**
4) **Balcı Ö.,** et al. (2019). Microstructural evolution and properties of in-house processed TiB_2 ceramics, International Boron Symposium, April 17-19, Nevşehir, Turkey. **Oral Presentation.**
5) **Balcı Ö.** (2019). The conversion of metal chlorides to cobalt-titanium-boron based hybrid nanostructures, ICACC 2019, *43rd International Conference & Exposition on Advanced Ceramics and Composites*, Florida, USA. **Poster Presentation.**
6) **Balcı Ö.,** et al. (2017). Effect of SPS conditions on the sintering and microstructure of TiB_2, *19th International Symposium on Boron, Borides & Related Materials, ISBB 2017*, September 3-8, Freiburg, Germany. **Oral Presentation.**
7) **Balcı Ö.,** et al. (2014). Effects of excess boron source and reducing agent on the microstructure of vanadium and niobium borides, *18th International Symposium on Boron, Borides and Related Materials, ISBB 2014*, August 31 – September 5, Honolulu, Hawaii, USA. **Oral Presentation.**
8) **Balcı Ö.,** et al. (2014). Investigations on microstructural evolution of vanadium borides mechanichemically synthesized by using various amounts of V_2O_5, B_2O_3 and Mg, *International Conference on Structural Nano Composites, NANOSTRUC 2014*, May 20-21, Madrid, Spain. **Oral Presentation.**
9) **Balcı Ö.,** ve diğ. (2014). Synthesis of niobium boride-niobium carbide powders via mechanical milling and annealing processes, *3th International Ceramic Glass Porcelain Enamel Glaze and Pigment Congress, SERES 2014*, October 15-17, Eskişehir, Turkey. **Poster Award.**
10) **Balcı Ö.,** et al. (2013). Powder Metallurgy of Al-based Composites Reinforced with Fe-based Glassy Particles: Effect of Microstructural Modification, *ICMAT 2013: 7th International Conference on Materials for Advanced Technologies*, June 30 - July 5, Suntec, Singapore. **Oral Presentation.**
11) **Balcı, Ö.,** et al. (2012). Influence of TiB_2 Particle Size on the Microstructure and Properties of Al Matrix Composites Prepared via Mechanical Alloying and Sintering, *ISMANAM 2012: 19th International Symposium on Metastable, Amorphous and Nanostructured Materials*, June 18-22, Moscow, Russia. **Oral Presentation.**
12) **Balcı Ö.,** et al. (2011). Characterization Investigations of some magnesium borates fabricated from B_2O_3/MgO blends by mechanically activated annealing, *ECERS XII: 12th Conference of the European Ceramic Society*, June 19-23, Stockholm, Sweden. **Oral Presentation.**

Selected Projects

1) "Novel Low Temperature Synthesis of Cobalt – Metal – Boron (Metal=Ni, Fe, Ti) Based Ternary Metal Borides from Metal Chlorides: Characterization and Application Oriented Investigations on Catalyzer/Magnet/Hybrid Composite Fabrication", TUBITAK Project No: 117F178, 2017-2019, **Principal Investigator**.
2) "Synthesis and Sintering Processes", ROKETSAN Project, 2019-2020, **Principal Investigator**.
3) "Encapsulation of Iron Based Magnetic Nanoparticles by Multi-Layer Graphene Shells Using Different Techniques, Characterization of Core/Shell Type Nanocapsules and Their Performance Tests for Biomedical Applications", TUBITAK Project No: 118F430, 2019-2021, **Researcher.**
4) "Preparation of high-efficiency N- and P-Type Thermoelectric Materials and Modules", TUBITAK Project No: 218M335, 2019-2022, **Researcher.**

5) "The Industrial-Scale Fabrication of High-Purity Amorphous Boron Powders", BOREN Project No: 2013.Ç0385, 2013-2015, **Researcher.**
6) "The Fabrication of Niobium Boride/Carbide Composite Powders by Mechanical Activation and Carbothermal Reduction Methods", İ.T.Ü. Scientific Research Projects No: 37812, 2013-2015, **Principal Investigator**.
7) "The Gas Phase Production of Pure Elemental Boron Powder by an Alternative Method", BOREN Project No: 2009-Ç0241, 2009-2011, **Researcher**.

Symposium, Conference and Congress Participated

1) 14th International Metallurgy and Material Congress, October 16-18, 2008, İstanbul, Turkey.
2) Romanian Conference on Advanced Materials ROCAM 2009, August 25-28, 2009, Brasov, Romania.
3) 25th Regional Conference on Solid State Science & Technology RCSSST 2009, December 21-23, 2009, Penang, Malaysia.
4) 19th International Conference on Metallurgy and Materials METAL 2010, May 18-20, 2010, Roznov pod Radhostem, Czech Republic.
5) 11th International Conference on Ceramic Processing Science ICCPS-11, August 29-September 1, 2010, Zurich, Switzerland.
6) 15th International Metallurgy and Material Congress, November 11-13, 2010, İstanbul, Turkey.
7) 12th International Workshop Nanoscience & Nanotechnology 2010, November 26-28, 2010, Varna, Bulgaria.
8) Advanced Research Workshop Engineering Ceramics 2011, May 8-12, 2011, Smolenice, Slovakia.
9) 12th Conference of the European Ceramic Society ECERS XII, June 19-23, 2011, Stockholm, Sweden.
10) 17th International Symposium on Boron, Borides and Related Materials, ISBB 2011, September 11-17, 2011, İstanbul, Turkey.
11) 18th International Conference on Solid Compounds of Transition Elements, SCTE 2012, March 3-April 5, 2012, Lisbon, Portugal.
12) 19th International Symposium on Metastable, Amorphous and Nanostructured Materials, ISMANAM 2012, June 18-22, 2012, Moscow, Russia.
13) 12th International Symposium on Novel and Nano Materials, ISNNM 2012, August 26-30, 2012, İstanbul, Türkiye.
14) IFW Winterschool 2013, January 20-23, 2013, Oberwiesenthal, Germany.
15) 7th International Conference on Materials for Advanced Technologies, ICMAT 2013, June 30 – July 5, 2013, Singapore.
16) International Conference on Structural Nano Composites, NANOSTRUC 2014, May 20-21, 2014, Madrid, Spain.
17) 18th International Symposium on Boron, Borides and Related Materials, ISBB 2014, August 31 – September 5 , Honolulu, Hawaii, USA.
18) 3th International Ceramic Glass Porcelain Enamel Glaze and Pigment Congress, SERES 2014, October 15-17, Eskişehir, Turkey.
19) IXth Ceramic Congress with International Participation, November 26-28, 2015, Afyonkarahisar, Türkiye.
20) 19th International Symposium on Boron, Borides and Related Materials, ISBB 2017, September 3-8, 2017, Freiburg, Germany.
21) 30th National Chemistry Congress, November 5-8, 2018, Gazimağusa, KKTC.
22) 43rd International Conference and Exposition on Advanced Ceramics and Composites, ICACC 2019, January 27-February 1, 2019, Daytona Beach, Florida, USA.
23) International Boron Symposium, April 17-19, 2019, Nevşehir, Turkey.
24) 20th International Symposium on Boron, Borides and Related Materials, ISBB 2019, September 22-27, 2019, Niigata, Japan.

25) Workshop on Advances in Solid State Chemistry and Physics & Nanoscience for Energy Harvesting Technologies, September 27-28, 2019, Tsukuba, Japan.

ADDITIONAL INFORMATION

Languages: Turkish (Native), English (Fluent), German (Fluent)
Researchgate Profile: https://www.researchgate.net/profile/Oezge_Balci
ORCID ID: https://orcid.org/0000-0001-6756-3180
Computer Skills: MS Office Programmes, FactSage™ Thermodynamical Software
Professional Memberships: UCTEA Chamber of Metallurgical and Materials Engineers, Turkish Ceramic Association.