İLKAY KALAY

Department of Materials Science and Engineering
Turkish-Japanese Science and Technology University, Ankara, TURKEY
Office Phone: +90 312 955 2026
E-mail: ilkay.kalay@tju.edu.tr

EDUCATION

Ph.D. - Materials Science and Engineering, December 2010
Iowa State University
Materials Science and Engineering Department, Ames, IA, USA
Dissertation Title: "*Devitrification Kinetics and Phase Selection Mechanisms in Cu-Zr Metallic Glasses*"
Advisors: Prof. Ralph E. Napolitano and Prof. Matthew J. Kramer

Doctoral Research Experience (Iowa State University & U.S. DOE National Laboratories)

During her doctoral studies at Iowa State University, İlkay Kalay carried out advanced research at the U.S. Department of Energy's Ames Laboratory, focusing on devitrification kinetics and phase selection mechanisms in Cu–Zr-based metallic glasses. Her work integrated alloy synthesis, controlled thermal processing, and advanced characterization techniques to reveal the evolution of microstructural hierarchy during crystallization. In addition to Ames Laboratory facilities, she conducted synchrotron X-ray diffraction studies at Argonne National Laboratory, strengthening her expertise in in situ and high-resolution structural analysis. Under the supervision of Prof. Ralph E. Napolitano and Prof. Matthew J. Kramer, she developed a strong background in kinetic modeling, phase transformations, and rapid solidification of complex alloy systems.

M.S. – Metallurgical and Materials Engineering, January 2004
Middle East Technical University
Department of Metallurgical and Materials Engineering, Ankara, Turkey
M. S. Thesis Title: "*Synthesis and Characterization of Zirconium Based Bulk Amorphous Alloys*"
Advisors: Prof. M. Vedat Akdeniz and Prof. Amdulla O. Mekhrabov

B. S. - Metallurgical and Materials Engineering, June 2001
Middle East Technical University
Department of Metallurgical and Materials Engineering, Ankara, Turkey

WORK EXPERIENCE

Associate Professor, February 2026-Present
Materials Science and Engineering Department, Turkish-Japanese Science and Technology University, Ankara, Türkiye

Associate Professor, (YÖK) June 2023
Assistant Professor, September 2011 – February 2026
Materials Science and Engineering Department, Cankaya University, Ankara, Türkiye

Research/Teaching Assistant, August 2006 – December 2010
Ames Laboratory of United States Department of Energy / Materials Science and Engineering Department, ISU, Ames, IA, USA

Research Scientist, December 2004 – July 2006
METU Central Laboratory, METU, Ankara, Türkiye

PROJECTS

1. **Co-Principal Investigator,** "Metallic Glass/Nanocrystal Composites and NiTiHf Shape Memory Alloys for High Temperature Applications", **AFOSR`s (The Air Force Office of Scientific Research, U.S.A.)** BAA Topic: Aerospace Materials for Extreme Environments, **(SEP 2020-SEP 2024)**

2. **Co-Principal Investigator,** "The Local Structure and Chemistry in Marginal Glass Forming Alloys", **AFOSR`s (The Air Force Office of Scientific Research, U.S.A.)** BAA Topic: Aerospace Materials for Extreme Environments, **(MAR 2017-SEP 2021)**

3. **Principal Investigator, TUBİTAK 3501 (117M295)** "Samaryum Katkılı Bakır-Zirkonyum-Aluminyum Bazlı Metalik Cam ve Nanokompozitlerinin Üretilmesi ve Geliştirilmesi", **(OCT 2017- FEB 2020)**

4. **Researcher**, U.S. Department of Energy Projects AL-90-501-002; "Structure and Chemistry in Condensed Systems", **(2008-2010).**

5. **Researcher**, Advanced Photon Source, Argonne National Laboratory; "Time resolved phase transitions in Al and Zr based model alloy systems", **2007**.

6. **Researcher,** METU BAP-2002-07-02-00-108; "Synthesis and Characterization of Zirconium Based Bulk Amorphous Alloys", **(2002-2004)**

RESEARCH INTERESTS

- Development and Characterization of High Entropy Alloys
- Rapid solidification and metallic glass formation
- Synthesis and characterization of bulk metallic glass nanocomposites
- Development and Characterization of Magnetic High Entropy Alloys
- Phase selection mechanisms and evolution of structural hierarchy during devitrification
- Phase transformations in rare-earth free magnets
- Development of rare-earth free magnets
- Kinetic modeling, predicting and controlling of devitrification microstructures in glass-forming alloys.
- Characterization Techniques
  (Analytical electron microscopy (SEM and TEM), X-Ray Scattering (Conventional and Synchrotron X-ray Diffraction), thermal analysis

THESIS SUPERVISED

- **Supervisor:** M.S. Thesis Title: Synthesis and Characterization of High Entropy Alloys for High Temperature Applications, Uluğ Seyda Özaydınlık, (2023-2026)

- **Supervisor:** M.S. Thesis Title: Development of Magnetic High Entropy Alloys, H. Basri Cerci, Cankaya University, Micro and Nanotechnology Garaduate Program (2019-2022)

- **Supervisor:** M.S. Thesis Title: Development of High Entropy Alloys For High Temperature Applications, Ayberk Ayrenk, Cankaya University, Micro and Nanotechnology Garaduate Program (2018-2020)

- **Co-Supervisor:** M.S. Thesis Title: Production and Characterization of Zr-Cu-RE Based Bulk Amorphous/Nanocrystal Composite, Fatih Sikan, METU, Metallurgical and Materials Engineering (2015-2017)

- **Co-Supervisor:** M.S. Thesis Title: Development of RE-free MnAl alloys, Ozgun Acar, METU, Metallurgical and Materials Engineering (2014-2016)

AWARDS

- **BEST POSTER AWARD,** "Crystallization Kinetics and Mechanical Properties of Zr-Cu-Al-Sm Metallic Glasses and Their Nanocomposites", TMS 2020 149th Annual Meeting & Exhibition (California/U.S.A.), **February 2020.**

- **Paper was featured on Advances in Engineering (January 2016),** I Kalay, R.E. Napolitano, M.J. Kramer, *"Crystallization Kinetics and Phase Transformation Mechanism in $Cu_{56}Zr_{44}$ glassy alloy"*, Metallurgical and Materials Transactions A-Physical Metallurgy and Materials Science, Physical Metallurgy and Materials Science, vol. 46, issue 8, pp. 3356-3364, 2015.

- **BEST POSTER AWARD,** "Phase Selection in Cu-Zr Metallic Glasses", TMS 2015 144th Annual Meeting & Exhibition (Florida/U.S.A.), **March 2015.**

- **Paper was featured on Advances in Engineering (March 2013),** Y. E. Kalay, I. Kalay, J. Hwang, P.M. Voyles, M. J. Kramer, "*Local Chemical and Topological Order in Al-Tb and its Role in Controlling Nanocrystal Formation*", Acta Materialia, vol. 60, issue 3, p. 994-1003, February 2012.

- **Paper was highlighted by Physical Review Letters (May 2012),** J. Hwang, Z. H. Melgarejo, Y. E. Kalay, I. Kalay, M. J. Kramer, D. S. Stone, P. M. Voyles, "*Nanoscale structure and structural relaxation in Zr50Cu45Al5 bulk metallic glass"*, Physical Review Letters, vol. 108, issue 19, p. 195505-195510, May 2012.

PROFESSIONAL ACTIVITIES

- **Organization Commitee Member,** DSEC VII Directionally Solidified Eutectics Conference, May 2023.
- **Chair,** AVRASYA 7th International Conference on Applied Sciences, (virtual), Budapeşt, Hungary, 2023.
- **Congress Session Coordinator and Chair**, International 17th International Metallurgy & Materials Congress, September 2014.
- **Advisory Committee and Editorial Board**, 7th Engineering and Technology Symposium, May 2014 and 6th Engineering and Technology Symposium, April 2013, Çankaya University.
- **Panelist,** TUBITAK, 1001 and 3501 projects.
- **Project Review Expert,** KOSGEB, Research and Development & Innovation and Industrial Application Support Program
- **Reviewer** for peer reviewed journal, Journal of Non-Crystalline Solids, Thin Solid Films, Materials Chemistry and Physics, Materials Science and Technology
- Student Member, Materials Advantage (TMS, AIST, ACerS, ASM Int.).
- METU and ISU Alumni Associations.

ACADEMIC SERVICES

- Advisor to the Rector, Turkish-Japanese Science and Technology University.
- Çankaya University, Nanotechnology Research Laboratory Coordinator

- MSE Department, Summer Internship Committee (Head)
- MSE Department, Industrial and Occup. Relations Committee (Head)
- MSE Department, Errors and Appeals Committee (Head)
- MSE Department, Accreditation Committee
- MSE Department, Education Committee (Undergraduate/Graduate)
- MSE Department, Erasmus Committee
- MSE Department, Laboratory Development Committee
- MSE Department, Strategic Planning Committee
- MSE Department, Lateral and Vertical Transfers Committee
- Academic Advisor of Materials Science and Nanotechnology Group
- Student Mentoring, Iowa State University, Ames, USA, 2008

TEACHING EXPERIENCE

Assistant/Associate Professor, Çankaya University, (September 2011-2026)
Materials Science and Engineering & Micro and Nanotechnology Graduate Program

ME 451	Non-Destructive Testing of Materials
ME 452	Welding Technologies
MNT 508	Structure and Analysis of Materials/Nanomaterials
MNT 511	Thermodynamics of Solids
MNT 512	Phase Transformations and Kinetics
MSE 409	Phase Transformations
MSE 408	Innovative Engineering Design and Implementation
MSE 407	Innovative Engineering Analysis and Design
MSE 324	Casting and Solidification
MSE 307	Materials Characterization II
MSE 226	Engineering Materials
MSE 225	Introduction to Materials Science
MSE 204	Thermodynamics and Phase Equilibria
MSE 203	Introduction to Thermodynamics
MSE 201	Materials Science I
MSE 125	Materials Science and General Chemistry
MSE 102	Materials Science and Engineering Orientation

Teaching and Laboratory Assistant, Iowa State University (2006-2010)

During her Ph.D study, she was appointed by Iowa State University and Ames Laboratory of United States Department of Energy as teaching and laboratory assistant.

Assisted sophomore students in thermal analysis and mechanical tests laboratory.

Thermal Analyses and Mechanical Tests Laboratory
Supply hands-on user trainings for undergraduate graduate students and postdocs in thermal analyses laboratory. Prepared standard operating procedures (SOPs) for the instruments.

SYNERGISTIC ACTIVITIES

- Commission Member, *Clean and Circular Economy Working Group*, Climate Council Science and Technology Commission, established by TÜBİTAK and T.C. Ministry of Environment, Urbanization and Climate Change, contributed to the development of national policy and action strategies aligned with Türkiye's 2053 Net Zero Emissions target and Green Development framework. Workshop, Ankara / Online, 21–25 February 2022.
- TRT Radio 1 – "Science Is Life (Bilim Hayattır)" Program**:** Invited guest on the nationally broadcast "Science Is Life" program on TRT Radio 1**,** discussing topics related to Materials Science**.** Ankara, Interview, 22 January 2020.
- Volunteer judge in Iowa State Science and Technology Fair, Ames, IA, USA, 2008 and 2009.
- Organization Committee Member**,** International 17th International Metallurgy & Materials Congress, September 2014.

PUBLICATIONS

- E. Acun, F. Sun, **I. Kalay**, M-H. Berger, Y. E. Kalay, "Crack propagation and shear band evolution in marginal Al-RE metallic glasses", **Journal of Alloys and Compounds**, vol. 1040, pp. 183476, **2025.**
- T.H. Ulucan, **I. Kalay,** Y.E. Kalay, "The Anomalous Nucleation in Al-Tb"Metallic Glasses", **Metallurgical and Materials Transactions A-Physical Metallurgy and Materials Science**, vol. 52, pp. 700-710, **2021**.
- C. Okuyucu, T. H. Ulucan, M. Abboud, A. Motallebzadeh, S. Ozerinc, **I. Kalay**, Y.E. Kalay, "Nanomechanical properties of Al-Tb marginal metallic glass", **Materials Science & Engineering A**, vol. pp. 145809, **2023.**
- A. Ayrenk, **I. Kalay, "**Microstructure and mechanical properties of Al-Co-Cr-Fe-Ni-(Nb-Ti) high entropy alloys", **Philosophical Magazine, vol.** 102 issue. 19, pp. 1961-1973, **2022.**
- **I. Kalay,** "Microstructure and Mechanical Properties of CoCrFeNi Ti-Al High Entropy Alloys", **Hittite Journal of Science and Engineering**, vol. 7, issue 2, pp. 157-162, **2020.**
- F. Sikan, G. Polat, **I.Kalay**, Y.E. Kalay, "Effect of Sm on Crystallization Kinetics of Cu-Zr-Al Metallic Glasses", **Thermochimica Acta,** vol. 683, pp. 178439, 2020.

- A. Genc, O. Acar, S. Turan, **I.Kalay**, U. Savaci, Y.E. Kalay, "Investigation of phase selection hierarchy in Mn–Al alloys", **Intermetallics**, vol. 115, 106617, 2019.
- F. Sıkan, S.E. Atabay, A. Motallebzadeh, S. Özerinç, **I. Kalay**, Y.E. Kalay, "Effect of Sm on Thermal and Mechanical Properties of Cu-Zr-Al Bulk Metallic Glasses", **Materials Science and Engineering A**, vol. 743, pp. 168-174, 2019.
- F.Sikan, B. Yasar, **I. Kalay,** "Nanocrystallization in Cu-Zr-Al-Sm Bulk Metallic Glasses", **Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science**, vol. 49, issue 4, pp. 1328-1335, 2018.
- **I Kalay**, R.E. Napolitano, M.J. Kramer, *"Crystallization Kinetics and Phase Transformation Mechanism in $Cu_{56}Zr_{44}$ glassy alloy"*, **Metallurgical and Materials Transactions A-Physical Metallurgy and Materials Science, Physical Metallurgy and Materials Science**, vol. 46, issue 8, pp. 3356-3364, **2015**.*
  **** Paper was featured on Advances in Engineering (January 2016)***
- T. E. Cullinan, **I Kalay**, Y.E. Kalay, R.E. Napolitano, M.J. Kramer, *"Kinetics and Mechanisms of Isothermal Devitrification in Amorphous $Cu_{50}Zr_{50}$"*, **Metallurgical and Materials Transactions A-Physical Metallurgy and Materials Science**, vol. 46, issue 2, pp. 600-613, **2015**.
- J. Hwang, Z. H. Melgarejo, Y. E. Kalay, **I. Kalay**, M. J. Kramer, D. S. Stone, P. M. Voyles, "*Nanoscale structure and structural relaxation in Zr50Cu45Al5 bulk metallic glass"*, **Physical Review Letters**, vol. 108, issue 19, p. 195505-195510, 2012. **
  ***** Paper was highlighted by Physical Review Letters (May 2012)***
- Y. E. Kalay, **I. Kalay**, J. Hwang, P.M. Voyles, M. J. Kramer, "*Local Chemical and Topological Order in Al-Tb and its Role in Controlling Nanocrystal Formation*"**, Acta Materialia**, vol. 60, issue 3, p. 994-1003, 2012. ***
  ****** Paper was featured on Advances in Engineering (March 2013)***
- **I. Kalay**, M.J. Kramer, R.E. Napolitano, "*High-accuracy X-ray diffraction analysis of phase evolution sequence during devitrification of $Cu_{50}Zr_{50}$ metallic glass"*, **Metallurgical and Materials Transactions A-Physical Metallurgy and Materials Science**, 42A, issue 5, p.1144-1153, 2011.
- F. Sıkan, **I. Kalay**, Y. E. Kalay, *"Sm Microalloyed Cu-Zr-Al Bulk Metallic Glasses"*, 18th International Metallurgy & Materials Congress, UCEAT Chamber of Metallurgical Engineers, September 2016, Istanbul, Türkiye, Congress e-Book, p. 424-427.
- **I. (Saltoglu) Kalay**, M. V. Akdeniz and A. O. Mekhrabov, "*Synthesis and Characterization of Zirconium Based Bulk Amorphous Alloys"*, 12th International Metallurgy & Materials Congress, UCEAT Chamber of Metallurgical Engineers, September 2005, Istanbul, Türkiye, Congress e-Book, p. 1103-1109.
- **I. (Saltoglu) Kalay**, A. O. Mekhrabov and M. V. Akdeniz, *"Prediction of Bulk Glass Forming Ability in Zirconium Based Multicomponent Alloy Systems"*, 12th International Metallurgy & Materials Congress, UCEAT

Chamber of Metallurgical Engineers, September 2005, Istanbul, Türkiye, Congress e-Book, p. 2078-2085.

CONFERENCE TALKS

1. Y. E. Kalay, C. Okuyucu, D. Sarıtürk, **I. Kalay**, "*Advanced Characterization of the Local Topological and Chemical Order in Marginal Metallic Glasses*", TMS 2024 153th Annual Meeting & Exhibition, Orlando, Florida, U.S.A. **MAR 2024.**
2. **I. Kalay**, "*Structure And Mechanical Properties Of Co25Ni25(HfTiZr)50, (CoNi)45(HfTiZr)45Al10 AND (CoNi)45(HfTiZr)45Cu10 High Entropy Alloys"*, AVRASYA 7th International Conference On Applied Sciences, (virtual), Budapeşt, Hungary, **MAR 2023.**
3. **I. Kalay**, "*Thermal Analysis And Fracture Behaviour Of Cu-Zr-Al-Sm Metallic Glasses*", 5th International Congress on Engineering Sciences and Multidisciplinary Approaches, İstanbul, Türkiye, **FEB 2023**.
4. H. B. Çerçi, **I. Kalay** *"Characterization Of V, Nb And Ti Alloyed Fe-Co-Ni-Al-Cu High Entropy Alloys*", 2nd International Materials Engineering and Advanced Manufacturing Technologies Congress (IMEAMTC'23), İstanbul, Türkiye, **JAN 2023.**
5. C. Okuyucu, D. Sarıtürk, M. Abboud, A. Motallebzadeh, S. Özerinç, **I. Kalay**, Y.E. Kalay, "An Investigation of Nanomechanical Properties of Nanocrystal Embedded Marginal Metallic Glasses", TMS 2023 152th Annual Meeting & Exhibition, San Diego, California, U.S.A. **MAR 2023.**
6. H. B. Çerçi, **I. Kalay**, "Microstructure And Magnetic Properties Of Fe-Co-Ni-Al-Cu-Ti High Entropy Alloys", . Ege 7th International Conference on Applied Sciences, İzmir, Türkiye, **DEC 2022.**
7. C. Okuyucu, D. Sariturk, **I. Kalay**, Y. E. Kalay, *"Investigation of MRO Clusters in Molten Marginal Metallic Glasses"*, TMS 151th Annual Meeting & Exhibition, Anaheim, CA, U.S.A, **MAR 2022.**
8. C. Okuyucu, D. Sariturk, T. Ulucan, M. Abboud, S. Ozerinc, **I. Kalay**, Y. E. Kalay, "*The Mechanical Properties of Al-Tb Nanocrystalline Marginal Metallic Glass Composite"* TMS 151th Annual Meeting & Exhibition, Anaheim, CA, U.S.A, **MAR 2022.**
9. E. Erdal, D. Sariturk, C. Okuyucu, **I. Kalay**, Y. E. Kalay, "*Devitrification Behavior of Al-RE based Ternary Metallic Glasses"* TMS 151th Annual Meeting & Exhibition, Anaheim, CA, U.S.A, **MAR 2022.**
10. **I. Kalay**, T. Ulucan, S. Özerinç, Y. E. Kalay, *"Micromechanical Properties of Marginal Glass Forming Alloys"*, TMS 149th Annual Meeting & Exhibition, San Diego, CA, U.S.A, February 2020.
11. T. Ulucan, **. I. Kalay**, Y. E. Kalay, *"The Intriguing Structure of Marginal Glass Forming Alloys*", TMS 149th Annual Meeting & Exhibition, San Diego, CA, U.S.A, February 2020.

12. O. Acar, M. Genc Unalan, **I. Kalay,** Y.E. Kalay**, "***Epsilon to Tau Phase Transformation in MnAl Alloys",* TMS 149th Annual Meeting & Exhibition, San Diego, CA, U.S.A, February 2020.

13. F. Sıkan, H. B. Cerci, Y. E. Kalay, **I. Kalay,** *"Synthesis and Development of Sm Microalloyed Zr-Cu-Al Based Metallic Glasses and Their Nanocomposites",* TMS 148th Annual Meeting & Exhibition, San Antonio, TX, U.S.A., March 2019.

14. B. Yasar, I. Kalay, Y.E. Kalay, *"The Influence of Liquid Structure on the Devitrification of Solid Amorphous Al-based Marginal Glass Forming Alloys"*, TMS 147th Annual Meeting & Exhibition, Phoenix, AZ, U.S.A, MAR 2018.

15. F. Sıkan, **I. Kalay**, S. Özerinç, Y. E. Kalay **"***Effect of Sm Micro-alloying on the Mechanical Behavior and Crystallization Kinetics of Cu-Zr-Al BMGs",* TMS 146th Annual Meeting & Exhibition, San Diego, CA, U.S.A, February 2017.

16. A.M. Gen**c.** O. Acar, **I. Kalay,** Y.E. Kalay, *"Microstructural Characterization of Magnetic MnAl Alloys",* TMS 146th Annual Meeting & Exhibition, San Diego, CA, U.S.A, February 2017.

17. A.M. Genc, O. Acar, **I. Kalay,** Y.E. Kalay, **"***The Kinetics of Ferromagnetic Tau Phase Formation in Mn-Al Alloys",* TMS 146th Annual Meeting & Exhibition, San Diego, CA, U.S.A, February 2017.

18. F. Sıkan, **I. Kalay**, Y. E. Kalay,*"Sm Microalloyed Cu-Zr-Al Bulk Metallic Glasses"*, 18th International Metallurgy-Materials Congress and Fair, Istanbul, Turkey, September 2016.

19. F. Sıkan, **I. Kalay**, Y. E. Kalay **, "***Characterization of Glassy and Partially Crystalline Cu-Zr-Al-Sm Metallic Glasses*", TMS 145th Annual Meeting & Exhibition, Nashville, TN, U.S.A, February 2016.

20. O. Acar, M. Genc, **I. Kalay**, Y. E. Kalay, "Characterization of Mn-Al Magnetic Alloys", TMS 144th Annual Meeting & Exhibition, Orlando, FL, U.S.A, March 2015.

21. **I. Kalay**, Y. E. Kalay, M. J. Kramer, R. E. Napolitano,"Crystallization Mechanisms and Structural Relaxation in Cu-Zr Metallic Glasses", **TMS**, San Diego, CA, USA, February 2014.

22. **I. Kalay**, Y. E. Kalay, M. J. Kramer, R. E. Napolitano,"Phase Selection and Transformation Mechanisms and Devitirification Kinetics in Cu-Zr Based Metallic Glasses", **21. Ulusal Elektron Mikroskopi Kongresi,** Mersin, Turkey, May 2013.

23. **I. Kalay**, Y. E. Kalay, M. J. Kramer, R. E. Napolitano, "Devitrification Kinetics and Phase Selection Mechanisms in Cu-Zr Metallic Glasses", **TMS**, San Antonio, TX, USA, March 2013.

24. P. Voyles, J. Hwang, Z. Melgarejo, D. Stone, **I. Kalay**, M. Kramer, "Structure and Relaxation of Zr-Cu-Al Bulk Metallic Glass from Hybrid Reverse Monte Carlo Modeling of Fluctuation Electron Microscopy Data", **TMS**, Orlando, FL, USA, March 2012.

25. Y.E. Kalay, T. Demirtas, **I. Kalay**, J. Hwang, P.M. Voyles, R.E. Napolitano, M.J. Kramer "*Effects of Local Chemical and Topological Ordering in*

Controlling Nanocrystal Formation in Al-Rare Earth (RE) Alloys", **THERMEC**, Quebec, Canada, August 2011. ***(INVITED)***

26. J. Hwang, Y. E. Kalay, **I. Kalay**, M. J. Kramer, P. M. Voyles, "*Structure of Zr Bulk Metallic Glasses Constrained at Short and Medium Range*", **GOMD**, Savannah, GA, May 2011.

27. J. Hwang, Y. E. Kalay, **I. Kalay**, M. J. Kramer, P. M. Voyles, "*Reverse Monte Carlo Modeling of Fluctuation Electron Microscopy Data*", **GOMD**, Savannah, GA, May 2011.

28. **I. Kalay**, Y. E. Kalay, M. J. Kramer, R. E. Napolitano, *"Devitrification Kinetics and Phase Selection Mechanisms in Cu-Zr"*, **TMS**, San Diego, CA, USA, February 2011.

29. J. Hwang, Y. E. Kalay, **I. Kalay**, M. J. Kramer, P. M. Voyles, "Nanometer scale structural fluctuation in Zr-based bulk metallic glass", **MRS**, Boston, MA, September 2010.

30. **I. Kalay,** Y.E. Kalay, M.J. Kramer, and R.E. Napolitano *"Crystallization Mechanism in Amorphous Cu-Zr"*, **TMS**, Seattle, WA, USA, February 2010.

31. **I. Kalay**,*"Devitrification Kinetics and Phase Selection Mechanism in Amorphous Cu-Zr System",* **MRS Student Seminer Series**, Iowa State University, 2010.

32. R. E. Napolitano, **I. Kalay**, M. J. Kramer, *"Devitrification in Cu-Zr Binary Metallic Glasses: Energetics, Structure, And Dynamics",* **THERMEC**, Berlin, Germany, August 2009. ***(INVITED)***

33. **I. Kalay**, Y. E. Kalay, M. J. Kramer, *"Devitrification in Cu-Zr Binary Metallic Glasses: Energetics, Structure, And Dynamics",* **MS&T**, Pittsburgh, PA, USA, October 2008.

34. **I. (Saltoglu) Kalay**, M. V. Akdeniz, O. A. Mekhrabov, *"Synthesis and Characterization of Zirconium Based Bulk Amorphous Alloys"*, 12th **International Metallurgy-Materials Congress and Fair**, Istanbul, Turkey, 2005.

POSTER PRESENTATIONS

1. E. Erdal, D. Sariturk, C. Okuyucu, **I. Kalay**, Y. E. Kalay, "*Devitrification Behavior of Al-RE based Ternary Metallic Glasses"* TMS 151th Annual Meeting & Exhibition, Anaheim, CA, U.S.A, **MAR 2022.**

2. C. Okuyucu, D. Sariturk, T. Ulucan, M. Abboud, S. Ozerinc, **I. Kalay**, Y. E. Kalay, "*The Mechanical Properties of Al-Tb Nanocrystalline Marginal Metallic Glass Composite"* TMS 151th Annual Meeting & Exhibition, Anaheim, CA, U.S.A, **MAR 2022.**

3. H. B. Cerci, **I. Kalay**, *"Crystallization Kinetics and Mechanical Porperties of Zr-CuAl-Sm Metallic Glasses and Their Nanocomposites"*, TMS 149th Annual Meeting & Exhibition, San Diego, CA, U.S.A, February 2020.

4. H. B. Cerci, **I. Kalay**, "*Development and Characterization of CoCrCuFeNi(TiAl) High Entropy Alloys",* TMS 149th Annual Meeting & Exhibition, San Diego, CA, U.S.A, February 2020.

5. A. Ayrenk, **I. Kalay**, Development of Non-equiatomic High Entropy Alloys for High Temperature Applications", TMS 149th Annual Meeting & Exhibition, San Diego, CA, U.S.A, February 2020.
6. **I. Kalay**, T. Ulucan, S. Özerinç, Y. E. Kalay, *"Micromechanical Properties of Marginal Glass Forming Alloys"*, TMS 149th Annual Meeting & Exhibition, San Diego, CA, U.S.A, February 2020.
7. O. Acar , A.M. Genc, O. Acar, Y.E. Kalay, **I. Kalay, "***Investigation Phase Transformation Route in Mn-Al Alloys",* TMS 146th Annual Meeting & Exhibition, San Diego, CA, U.S.A, February 2017.
8. F. Sıkan, **I. Kalay**, Y. E. Kalay, **"***Nanocrystallization in Cu-Zr-Al-Sm Metallic Glasses",* TMS 146th Annual Meeting & Exhibition, San Diego, CA, U.S.A, February 2017.
9. **I. Kalay**, Y.E. Kalay, M.J. Kramer, *"Phase Selection in Cu-Zr Metallic Glass"*, TMS 144th Annual Meeting & Exhibition, Orlando, FL, U.S.A, March 2015.
   (BEST POSTER AWARD)
10. **I. Kalay**, F. Sikan, Y. E. Kalay, *"Development of Cu-Zr-Al-RE (Rare Earth) Bulk Metallic Glasses"*, TMS 144th Annual Meeting & Exhibition, Orlando, FL, U.S.A, March 2015.
11. O. Acar, **I. Kalay**, Y. E. Kalay, "Development of Mn-Al-Ti Permanent Magnet Alloys", **TMS** 143th Annual Meeting & Exhibition, San Diego, CA, USA, February 2014.
12. **I. Kalay**, Y.E. Kalay, M.J. Kramer, L.S. Chumbley, I.E. Anderson, and R.E. Napolitano "*Structural and Chemical Characterization at Nanoscales*", **Workshop on Micro-XRF Analysis of Chemically Complex Materials**, Ames Laboratory, Ames, IA, USA, 2010.
13. Y.E. Kalay, **I.Kalay**, M.J. Kramer, R.E. Napolitano, S.H. Zhou "*Control of nanoscale crystallization dynamics and non-equilibrium structures in glass-forming metallic systems*", **Structure and Dynamics in Condensed Systems**, Ames Laboratory, Ames, IA, USA, 2009.
14. **I. Kalay**, Y.E. Kalay, M.J. Kramer, and, R.E. Napolitano, "*Crystallization Kinetics and Thermal Stability of Amorphous* $Cu_{50}Zr_{50}$", **TMS**, San Francisco, CA, USA, 2009.
15. R. Craft, A. Bauer, **I. Kalay**, R.E. Napolitano, "Devitrification Kinetics in $La_{55}Al_{25}Cu_{10}Ni_{10}$ Bulk Metallic Glass", **Undergraduate Student Poster Presentation**, Iowa State University, 2009.
16. **I. (Saltoglu) Kalay**, M. V. Akdeniz, O. A. Mekhrabov, *"Prediction of Bulk Glass Forming Ability in Zirconium Based Multicomponent Alloy Systems*", **12th Int. Metall. –Mater. Congress and Fair**, Istanbul, Turkey, 2005.

TECHNICAL SKILLS

Electron Microscopy

Scanning Electron Microscopy:

- JEOL JSM 6060 LV, and JSM 5910 LV.

Transmission Electron Microscopy

X-ray Scattering

- High energy synchrotron X-ray diffraction, conventional powder diffraction
- Rietveld structure refinement (GSAS, Rietica)

Thermal Analyses

- Differential Scanning Calorimeter (DSC)
- Simultaneous Thermogravimetric Analyzer and Differential Thermal Analyzer (TG/DTA)
- Thermogravimetric Analysis and Fourier Transform Infrared Spectrometer System (TGA/FTIR)
- Dynamic Mechanical Analyzer (DMA)
- Thermomechanical Analyzer (Dilatometer) (TMA)
- Thermal Conductivity Probe.

Mechanical Testing

- Tensile testing, micro/macro hardness testing, impact testing– Instron and Leco inst.).
- Metallography and failure analysis.

Alloy Production Techniques

- Experienced on alloy production using vacuum arc melting/casting furnaces, free-jet (Cu-wheel) melt-spinning, centrifugal casting and heat treatment.

Software

- Microscopy and Image Analysis

GATAN Digital Micrograph, ES Vision, Desktop Microscopist, Carine, ImageJ, Image-Pro, etc.

WORKSHOPS - TRAINING PROGRAMS

- "**3mes, Materials and Metallurgy Engineering Education Symposium**", Anadolu University, November 2013.
- **Advanced Thermal Analysis Thermophysical Properties Workshop,** NETZSCH, St.Paul, MN, USA, 2009.
- **Radiological Worker Training**, Ames, IA, USA, 2009.
- **Chemical Hygiene Plan and Personal Protective Equipment for Laboratory Employees**, Ames, IA, USA, 2006.
- **General Safety Training for Laboratory Employees**, Ames, IA, USA, 2006.
- **Test Laboratory Accreditation**, METU, Ankara, Turkey, 2005.

LINGUISTICS

- English (Advanced)
- Spanish (beginner)
- German (beginner)

Last page of CV