

## PERSONAL DATA

**Family Name:** MEKHRABOV  
**First Name(s):** Amdulla Oruc Oglu  
**Place and Date of Birth:** Bolnisi, Georgian Republic, USSR, April 15, 1952  
**Country of Residence:** Azerbaijan Republic  
**Nationality:** Azerbaijanian  
**Sex:** Male  
**Marital Status:** Married with three children  
**Present Professional Affiliation and Title** Professor, Dr. Science in Physics and Mathematics  
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**Educational Background:** Dr.Sc., Tbilisi State University, Georgia, 1990  
Ph.D., Moscow State University, USSR 1978  
B.S.Phys., Baku State University, Azerbaijan 1974

**Positions Held:** Professor, Dept. of Metall. and Materials Eng.,  
Middle East Technical University (1992-)  
Professor and Head of Dept. of Optics and Molecular  
Physics, Baku State Univ. (1990-1999)  
Assoc. Prof. Dept. of Optics and Molecular Physics,  
Baku State Univ. (1983-1990)  
Ass. Prof. Dept. of Optics and Molecular Physics,  
Baku State Univ. (1978-1983)  
-Univ. of Tokyo, Japan, Dept. of Materials Sci. and Eng.,  
Visiting researcher, (1 year) 1984/1985  
-Univ. of California at Santa Barbara ,USA,  
Fullbright Professor at Dept. of Chemical and Nuclear  
Engineering, (Four Months) 1991/1992

**Field of Specialization:** Alloy-Design; Metal&Alloy Physics  
Computational Materials Science  
Intermetallics&Atomic/Magnetic Ordering  
Bulk Amorphous/Nanocrystalline Materials  
Metal-Hydrides&Hydrogen Storage Materials  
Magnetic&Magnetocaloric Materials

**Knowledge of Languages:**

	Speaking	Writing	Reading
Azerbaijanish	Excell.	Excell.	Excell.
Russian	Excell.	Excell.	Excell.
Turkish	Excell.	Excell.	Excell.
English	Good	Good	Good
German	Fair	Good	Good

**Publications:** See Enclosed Lists

## **PROFILE**

### **Prof. Dr. Amdulla Mekhrabov**

Prof. Dr. Amdulla O. MEKHRABOV is a well-known scientist in the field of Modern Solid State Physics and Materials Science not only in the former Soviet Union, but also in the USA, European Countries, Japan and Turkey.

He was born in the Georgian Republic at April 15, 1952. Prof. A. Mekhrabov has graduated from Physics Department of Azerbaijan State University in 1974. He obtained his Doctor Science (1990) and Ph. D. (1978) degrees in Solid State Physics and Materials Science from Lomonosov Moscow State University. Amdulla O. Mekhrabov is a Professor of Metallurgical and Materials Engineering Department at the Middle East Technical University, Ankara, Turkey since 1992. Prior to that he worked as an Asst. Prof., Assoc. Prof., Full Prof. and Chairman of Physics Department at Azerbaijan State University, Baku, Azerbaijan Republic.

Prof. Dr. A. Mekhrabov worked also as Postdoctoral Researcher at Dept. of Materials Science and Engineering in the Tokyo University, Japan for 1 year (All-Soviet Union Visiting Researcher Award in Japan, 1984/1985) and as Visiting Fullbright Professor at Dept. of Chemical and Nuclear Engineering in the University of California at Santa Barbara, USA for 5 month (All-Soviet Union Lecturing and Research Award in USA, 1991/1992).

Prof. A. Mekhrabov is a author of more than 200 research works which are well-known in scientific public and has been published in leading international journals including “Acta Materialia”, “Scripta Materialia”, “J. of Alloys and Compounds”, “Acta Cryst.”, “Physica”, “Phys. Stat. Sol.”, “J. Phys. Chem. Sol.”, “J. Nuclear Materials”, “Fiz. Met. Metalloved.” and etc. and in Proceedings of prestigious International Conferences. Major fields of his scientific interests are includes Solid State Physics, Alloy Design, Computational Materials Science, Metallic Bulk Amorphous and Nanocrystalline Materials, Irradiation Effects on Materials, Hydrogen Storage Materials and etc.

Prof. Dr. A. Mekhrabov is a Fellow of Islamic World Academy of Sciences (2000) and Member of Union of Chambers of Turkish Engineers and Architects (1998).

**Prof. Dr. Amdulla Mekhrabov** received Ph.D (1978) and Doctor of Science (1990) degrees in Solid State Physics and Materials Science from Lomonosov Moscow State University (former USSR) and is a Visiting Professor of Metallurgical and Materials Engineering Department at the Middle East Technical University, Ankara, Turkey since 1992. Prior to that he worked as an Asst. Prof., Assoc. Prof., Full Prof. and Chairman of Physics Department at Azerbaijan State University, Baku, Azerbaijan Republic. He worked also as Postdoctoral Researcher at Dept. of Materials Science and Engineering in the Tokyo University, Japan (1984/1985) and as Visiting Fullbright Professor at Dept. of Chemical and Nuclear Engineering in the University of California at Santa Barbara, USA (1991/1992). Major fields of his scientific interests are includes Solid State Physics, Alloy Design, Computational Materials Science, Metallic Bulk Amorphous and Nanocrystalline Materials, Irradiation Effects on Materials, Hydrogen Storage Materials and etc.

**Prof. Dr. Amdulla O. MEKHRABOV**  
**AZERBAIJAN REPUBLIC**

### **LIST OF PUBLICATIONS (1976-2014)**

#### **1. INTERNATIONAL**

##### **1.1. JOURNAL PAPER**

1. Katsnelson A.A., **Mekhrabov A.O.**, and Silonov V.M., *Size effect contribution into Energetical and Structural Ordering Characteristics calculated by Pseudopotential Method*, **Fiz. Metal. Metalloved.**, vol. 42, No. 2, pp. 278-283, 1976
2. Katsnelson A.A., **Mekhrabov A.O.**, and Silonov V.M., *Short-Range Order Electron Theory with allowance for size-effects*, **Izv. Vuz. SSSR, Fizika**, Vol. 10, pp. 103-108, 1976
3. Katsnelson A.A., **Mekhrabov A.O.**, and Silonov V.M., *Size Effect in Electron Theory of Short Atomic Order in Approximation of Static Concentrational Waves*, **Fiz. Metal. Metalloved**, vol. 45, No. 1, pp. 33-37, 1978
4. Katsnelson A.A., **Mekhrabov A.O.**, and et al., *Short-Range Order in Alloys of Ni with the Elements of group VIII in the Periodic Table*, **Acta Cryst.**, vol. 34A, p. 325, 1978
5. Katsnelson A.A., **Mekhrabov A.O.**, and Silonov V.M., *Experimental and Theoretical Study of Short Order in Ni-Os and Co-Os Alloys*, **Fiz. Metal. Metalloved**, vol. 47, No. 5, pp. 993-997, 1979
6. Katsnelson A.A., **Mekhrabov A.O.**, and Silonov V.M., *Electron theory of Short Order for 3-component Alloys in Pseudopotential Approximation*, **Fiz. Metal. Metalloved**, vol. 52, pp. 661-662, 1981

7. **Mekhrabov A.O.**, and Doyama M., *Electronic Theory of Atomic Short-Range Order for Ternary Alloys using the Pseudopotential Approximation and its Comparison with Experiments*, **Phys. Stat. Sol.(b)**, vol. 126, pp. 453-458, 1984
8. Shimotomai M., **Mekhrabov A.O.**, Doyama M., and Fujisawa H., *Magnetostriction in Laves Phase Compounds  $RE_{1-x}Pr_xFe_2$  ( $RE= Ce, Sm, and Y$ ) and their easy axes of Magnetization*, **Physica**, vol. 130B, pp. 283-285, 1985
9. **Mekhrabov A.O.**, Shimotomai M., and Doyama M., *Damage Recovery in Electron-Irradiated Fe-Ni-Cr Alloys*, **J. Nucl. Mater.**, vol. 133&134, pp. 549-552, 1985
10. **Mekhrabov A.O.**, Babaev Z.M., and et al., *Pseudopotential Calculations of the Atomic Pair Interaction Energies and Kurnakov Temperature evaluation for  $Ni_3(Fe,Me)$  ternary Alloys*, **Fiz. Metal. Metalloved.**, vol. 61, No. 6, pp.1089-1093, 1986
11. **Mekhrabov A.O.**, *Pseudopotential Calculations of Short-Range Atomic Order Characteristics of 3-component  $Ni_3(Fe,Me)$  Alloys*, **Fiz. Metal. Metalloved.**, vol. 62, No. 5, pp.1023-1025, 1986
12. Matysina Z.A., **Mekhrabov A.O.**, Babaev Z.M., and et al., *Inpurities in  $Ni_3Fe$  Alloys*, **Phys. Stat. Sol.(b)**, vol. 138, pp. 399-406, 1986
13. **Mekhrabov A.O.**, Doyama M, Shimotomai M., Sato E and Iwata T., *The Influence of Vacancies on Radiation-Enhanced Phase Transition in Fe-Ni-Cr Alloys*, **Materials Science Forum**, vol. 15-18, pp. 1287-1292, 1987
14. **Mekhrabov A.O.**, Doyama M, Shimotomai M., Sato E and Iwata T., *Recovery of  $Ni_3Fe$  and  $Ni_3(Fe,Nb)$  Irradiated by 2 MeV electrons*, **Materials Science Forum**, vol. 15-18, pp. 1293-1298, 1987
15. Matysina Z.A., **Mekhrabov A.O.**, and et al., *Inpurities in  $Ni_3Fe$  Magnetic Alloys*, **J. Phys. Chem. Sol.**, vol. 48, pp.419-423, 1987
16. Matysina Z.A., **Mekhrabov A.O.**, and Babaev Z.M., *Ordering Temperatures and Order Parameters of  $Ni_3Fe$  Alloys with Mn and Cr Impurities*, **Fiz. Metal. Metalloved.**, vol. 64, pp.202-205, 1987
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18. **Mekhrabov A.O.**, Babaev Z.M., and Matysina Z.A., *The Effect of third Component Impurity C on the Heat Capacity of  $A_3B$ -type Ordered Alloys*, **Phys. Stat. Sol.(b)**, vol. 156, pp. 419-430, 1989
19. **Mekhrabov A.O.**, *Impurity Effect of  $Me= Cr, Nb, or Mn$  Third-Component Atoms on Hyperfine Interactions in Ordered  $Ni_3Fe$  Alloys*, **Hyperfine Interactions**, vol. 59, pp. 337-340, 1990

20. **Mekhrabov A.O.**, Ressamoğlu A., and Öztürk T., *A Study of Impurity Effect on Ordering Characteristics of Fe<sub>3</sub>Al Intermetallics*, **J. of Alloys and Compounds**, vol.205, pp.147-156, 1994
21. Akdeniz M.V., **Mekhrabov A.O.**, Yılmaz T., *The Role of Si addition on the interfacial interaction in Fe- Al diffusion layer*, **Scripta Met. et Mater.**, vol. 31(12), pp.1723-1728, 1994
22. **Mekhrabov A.O.**, *High- temperature X- ray diffraction studies of lattice dynamics in Ni<sub>3</sub>(Fe,Nb) ordered alloys*, **J. of Acta Physica Polonica A**, vol. 85(3), pp. 571- 578,1994
23. **Mekhrabov A.O.** and et all., *Order- disorder phase transformation in Fe - Al type alloys with BCC structure*, **Turkish J. of Physics**, vol.18, pp. 444-455, 1994
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25. Akdeniz M.V., **Mekhrabov A.O.** and Özbayramoğlu M., *Morphology of Solidification Microstructures in Fe-Al Based Intermetallic Compounds*, **Tr. J. of Medical Sciences**, Supplement, p. 165, 1995
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27. Ağdaş F., Akdeniz M.V., and **Mekhrabov A.O.**, *Intermetallic Compounds and their General Properties*, **Metallurgy, UCTEA Chamber of Metallurgical Engn.**, Ankara,Turkey, vol. 20, No.104, pp. 37-41, 1996
28. **Mekhrabov A.O.**, Akdeniz M.V. and Arer M.M., *Atomic Ordering Characteristics of Ni<sub>3</sub>Al Intermetallics with Substitutional Ternary Additions*, **Acta Mater.** , vol.45, No. 3, pp. 1077-1083, 1997
29. Eyvazov B., Aliev M., **Mehrabov H.O.** and Doruk M., *The Improvement of Corrosion Resistance of High Porous Powder Metallurgy Alloys by Coating with Polymeric Materials*, **Corrosion**, J. of Turkish Corrosion Association, vol. 10, No. 1-3, p. 20-24, 1998
30. Akdeniz M.V. and **Mekhrabov A.O.**, *The Effect of Substitutional Impurities on the Evolution of Fe-Al Diffusion Layer*, **Acta Mater.** , vol. 46, No. 4, pp. 1185-1192, 1998
31. **Mekhrabov A.O.** and Akdeniz M.V., *Effect of Ternary Alloying Elements additions on the Atomic Ordering Characteristics of Fe- Al Intermetallics*, **Acta Materiala**, vol. 47, No. 7, pp. 2067-2075, 1999

32. Anik M., Doruk M. and **Mekhrabov A.O.**, *On the Microstructural Characteristics of Al-Li Alloys and their Corrosion-Fatigue Behaviour*, **J. of Physicochemical Mechanics of Materials**, Special Issue on “**Problems of Corrosion and Corrosion Protection of Structural Materials**”, vol. 1, pp. 117-122, Lviv: Karpenko Physico-Mechanical Institute, Ukraine, 2000
33. Binnatov K.G., Ali-zade I.I. and **Mekhrabov A.O.**, *Effect of Nitriding on the Phase Transformations in the Fe-Mn Alloys*, **Turkish J. of Physics**, vol. 25, No. 6, pp. 537-542, 2001
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35. **Mekhrabov A.O.**, Doruk M., Aivazov B. and Aliyev M., *Microstructure and Corrosion Characteristics of Nickelless Stainless Steels*, **J. of Physicochemical Mechanics of Materials**, Special Issue on “**Problems of Corrosion and Corrosion Protection of Materials**”, vol. 3, pp. 132-137, Lviv: Karpenko Physico-Mechanical Institute, Ukraine, 2002
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38. Akdeniz M.V., **Mekhrabov A.O.** and Pehlivanoglu M.K., *Solidification Behaviour of Bulk Glass-Forming Alloy Systems*, **J. of Alloys and Compounds**, vol. 386, Issues 1-2, pp. 185-191, 2005
39. **Mekhrabov A.O.** and Akdeniz M.V., *Modelling and Monte Carlo Simulation of Atomic Ordering Processes in Ni<sub>3</sub>Al Intermetallics*, **Modelling Simul. Mater. Sci. Eng.**, vol. 15, pp. 1-12, 2007
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43. Suer S., **Mekhrabov A.O.** and Akdeniz M.V., *Theoretical Prediction of Bulk Glass Forming Ability (BGFA) of Ti-Cu based Multicomponent Alloys*, **J. of Non-Crystalline Solids**, vol. 355, pp. 373-378, 2009
44. Aykol M., **Mekhrabov A.O.** and Akdeniz M.V., *Site Selection and Pseudo-Clustering Behaviors of Alloying Elements in Aluminum–Lean  $\gamma$ -TiAl Intermetallics*, **Metallurgical and Materials Transactions A**, vol. 41A, pp. 267-274, 2010
45. Aykol M., **Mekhrabov A.O.** and Akdeniz M.V., *Effect of vanadium on atomic ordering characteristics and anti-phase boundary energies of B2-Fe-Co alloys*, **Intermetallics**, vol. 18, pp. 893-899, 2010
46. Kucuk I., Aykol M., Uzun O., Yildirim M., Kabaer M., Duman N., Yilmaz F., Erturk K., Akdeniz M.V., and **Mekhrabov A.O.**, *Effect of (Mo, W) substitution for Nb on glass forming ability and magnetic properties of Fe-Co-based bulk amorphous alloys fabricated by centrifugal casting*, **J. of Alloys and Compounds**, vol. 509, pp. 2334-2337, 2011
47. N. Duman, **A.O. Mekhrabov** and M.V. Akdeniz, *Microstructural and magnetic characterization of iron precipitation in Ni-Fe-Al alloys*, **Materials Characterization**, vol. 62, pp. 606-614, 2011
48. N. Duman, **A.O. Mekhrabov** and M.V. Akdeniz, *Kinetics of nanoscale precipitation in Ni-Fe-Al alloys: A magnetic monitoring approach*, **J. of Alloys and Compounds**, vol.509, pp. 6781-6786, 2011
49. Aykol M., **Mekhrabov A.O.** and Akdeniz M.V., *A generalized polytetrahedral cluster approach to partial coordination numbers in binary metallic glasses*, **Philosophical Magazine**, vol. 91, No. 22, pp. 2985-3005, 2011
50. Aykol M., Akdeniz M.V. and **Mekhrabov A.O.**, *Solidification behavior, glass forming ability and thermal characteristics of soft magnetic Fe-Co-B-Si-Nb-Cu bulk amorphous alloys*, **Intermetallics**, vol. 19, pp. 1330-1337, 2011
51. N. Duman, **A.O. Mekhrabov** and M.V. Akdeniz, *Microalloying effects on the microstructure and kinetics of nanoscale precipitation in Ni-A-Fe alloys*, **Intermetallics**, vol. 23, pp. 217-227, April 2012
52. Yildirim M., Akdeniz M.V. and **Mekhrabov A.O.**, *Effect of Ternary Alloying Elements Additions on the Order-Disorder Transformation Temperatures of B2-Type Ordered Fe-Al-X Intermetallics*, **Metallurgical and Materials Transactions A**, vol. 43A, pp. 1809-1816, June 2012
53. N. Duman, **A.O. Mekhrabov** and M.V. Akdeniz, *Magnetic Monitoring Approach to Nanocrystallization Kinetics in Fe-based Bulk Amorphous Alloy*, **Intermetallics**, vol. 43, pp. 152- 161, December 2013

54. A. Fadaie, M. V. Akdeniz, and **A. O. Mekhrabov**, *Synthesis and Characterization of Fe<sub>80</sub>B<sub>20</sub> Nanoalloys Produced by Surfactant Assisted Ball Milling*, **Acta Physica Polonica A**, vol. 125, No. 2, pp. 597-599, 2014
55. M. Yalcin, **A. O. Mekhrabov** and M. V. Akdeniz, *Effects of Nanoparticle Geometry and Temperature on the Structural Evolutions in FeCo Nanoalloys*, **Acta Physica Polonica A**, vol. 125, No. 2, pp. 600-602, 2014
56. Yildirim M., Akdeniz M.V. and **Mekhrabov A.O.**, *Microstructural Investigation and Phase Relationships of Fe-Al-Hf Alloys*, **Metallurgical and Materials Transactions A**, vol. 45A, pp. 3412- 3421, July 2014

## 1.2. CHAPTER IN A BOOK

1. Katsnelson A.A., **Mekhrabov A.O.**, and et al, *Pseudopotential Method in theory of Atomic Ordering*, In: **Solid State Physics and Chemistry**, pp. 54-65, Moscow State University Publ., Moscow, USSR, 1979
2. Matysina Z.A., Babaev Z.M.,and **Mekhrabov A.O.**, *The Impurity Effect on the Structural Ordering Processes of the alloys with FCC lattices*, In: **The Metastable Structure Formation Problems in the Alloys**, pp. 147-154, Dnepropetrovsk, Ukrainian SSR, 1983
3. Matysina Z.A., Babaev Z.M.,and **Mekhrabov A.O.**, *Phase Diagrams and Atomic Ordering in the Ternary Solid Solutions*, **Internal Report: VINITI**, No.4411-83, USSR, 1983
4. Matysina Z.A., Babaev Z.M.,and **Mekhrabov A.O.**, *Impurity Effect on the Heat Capacity of the Ordered Alloys with FCC lattices*, **Internal Report: VINITI**, No.2803-84, USSR, 1984
5. Matysina Z.A., Babaev Z.M., **Mekhrabov A.O.**,and et al., *Impurity Effect in the Atomic- and Magnetic Ordered Alloys* , **Internal Report: VINITI**, No.5643-84, USSR, 1984
6. **Mekhrabov A.O.**, Doyama M., Shimotomai M., and Sato E., *The Investigation of Order-Disorder Phase Transformation in Ni<sub>3</sub>Fe and Ni<sub>3</sub>(Fe,Nb) Alloys by Positron Annihilation*, In: **Positron Annihilation**, Ed. Jain P.C., Singru R.M., and Goinathan K.P., pp. 602-604, World Scientific Publ. Co., Singapore, 1985
7. Binnatov K.G., **Mekhrabov A.O.**,and et al., *The Influence of Electron Irradiation on the Structural State of Fe-Mn Alloys*, In: **Radiation-Induced Changes in Microstructure**, Eds. Garner F.A., Packan N.H., and Kumar A.S., pp. 743-747, ASTM, Philadelphia, USA, 1987
8. **Mekhrabov A.O.**, *The Mossbauer Spectroscopy Investigation of the Atomic Ordering Processes in the Ni<sub>3</sub>(Fe,Me) Ternary Alloys*, In: **Nuclear Spectroscopy and The Structure of Atomic Nucleus**, p. 542, Nauka Publ., Leningrad, USSR, 1988



9. Binnatov K.G., **Mekhrabov A.O.**, and et al., *Effect of Electron and Gamma-Ray Irradiation on the Chemical Composition and Atomic Distribution of Copper- and Iron-based Alloys*, In: **Effects of Radiation On Materials**, Vol. 1, pp. 667-672, Eds. Packan N.H., Stoller R.E., and Kumar A.S., ASTM, Philadelphia, USA, 1989
10. **Mekhrabov A.O.**, Akdeniz M.V. and Aktürk I., *The Effect of Alloying Additions on the Interfacial Interactions at the Fe-Al Interface During Coating*, in **Stability of Materials**, NATO Advanced Study Institutes (ASI), Eds. A. Gonis, P. E. A. Turchi and J. Kudrnousky, Plenum Press, New York, pp. 681-686, 1996
11. Akdeniz M.V., **Mekhrabov A.O.** and Ağdaş F., *Microstructural Examination of Mn alloyed Fe-Al based Intermetallics*, in **Intermetallics and Superalloys**, EUROMAT-Volume 10, eds. D.G. Morris, S. Naka and P. Caron, Wiley-VCH Verlag, Weinheim, pp. 228-233, 2000
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### 1.3. CONFERENCE PAPER

1. Katsnelson A.A., and **Mekhrabov A.O.**, *The Atomic Displacements Effect in the Pseudopotential Theory of Short-Range Order*, In : Abstracts of **V-th All-Soviet Union Conferences on “ Atomic Ordering and their Influence on the Alloy Properties”**, p. 30, Tomsk, USSR, 1976
2. Katsnelson A.A., **Mekhrabov A.O.**, and et al., *Pseudopotential Theory of Atomic Short-Range Order and its Comparison with Experiments*, Proc. of **V-th All-Soviet Union Conferences on “ Atomic Ordering and their Influence on the Alloy Properties”**, pp. 5-11, Tomsk, USSR, 1978
3. Katsnelson A.A., **Mekhrabov A.O.**, and Silonov V.M., *Short-Range Order in Ni-Os and Co-Os Alloys*, In : Abstracts of **VI-th All-Soviet Union Conferences on “ Atomic Ordering and their Influence on the Alloy Properties”**, p.6, Kiev, Ukrainian SSR, 1978
4. **Mekhrabov A.O.**, Ali-Zade I.I., and Babaev Z.M., *The Experimental Investigation of Crystal Lattice Dynamics in Third-component Ordered Alloys*, In :Abstracts of **VII-th All-Soviet Union Conferences on “ Atomic Ordering and their Influence on the Alloy Properties”**, p.58, Sverdlovsk, USSR, 1983
5. **Mekhrabov A.O.**, *Pseudopotential Theory of Atomic Short-Range Order for Ternary Alloys and its Comparison with Experiments*, In :Abstracts of **VII-th All-Soviet Union Conferences on “ Atomic Ordering and their Influence on the Alloy Properties”**, p.131, Sverdlovsk, USSR, 1983

6. Matysina Z.A., Milyan M.I., Babaev Z.M., and **Mekhrabov A.O.**, *Solubility of Substitutional Impurities in the Ordered Alloys*, Proc. of **III-rd All-Soviet Union Conferences on “Physico-Chemical Problems of High-Temperature Hydrogen Diffusivity in Metals”**, pp. 103-104, Dnepropetrovsk, Ukrainian SSR, 1983
7. Matysina Z.A., Babaev Z.M., and **Mekhrabov A.O.**, *The Effect of Impurities on the Curie Temperature of Binary Alloys*, In: Abstracts of **III-rd All-Soviet Union Conferences of Universities on “Physics of Magnetic Materials”**, p. 85, Irkutsk, USSR, 1984
8. **Mekhrabov A.O.**, Yamamoto R., and Doyama M., *Theoretical Investigations of Phase Transformations in Irradiated Fe-Cr and Fe-Ni-Cr Alloys*, In: Abstracts of **I-st International Conferences on “Materials for Thermo-Nuclear Fusion Reactors”**, p. 5P-17, Tokyo, Japan, 1984
9. **Mekhrabov A.O.**, Shimotomai M., and Doyama M., *The Vacancy Effects on Phase Transformations in Irradiated Fe-Ni-Cr Alloys*, In: Abstracts of **I-st International Conferences on “Materials for Thermo-Nuclear Fusion Reactors”**, p. 5P-16, Tokyo, Japan, 1984
10. **Mekhrabov A.O.**, Shimotomai M., Doyama M., and Sudzuki Y., *The Order-Disorder Phase Transformation in  $Ni_3Fe$  and  $Ni_3(Fe,Nb)$  Alloys*, In: Abstracts of **VII-th International Conferences on “Positron Annihilation”**, p. 13, India, 1985
11. **Mekhrabov A.O.**, *The X-Ray Diffractometer Investigations of Atomic Ordering Effect on Lattice Dynamics of  $Ni_3(Fe_{1-x}Nb_x)$  ternary Alloys*, In: Abstracts of **III-rd All-Soviet Union Conferences of Universities on “Physics of Magnetic Materials”**, p. 6, Irkutsk, USSR, 1986
12. **Mekhrabov A.O.**, Binnatov K.G., and et al., *Electron Irradiation Effect on the Structural Characteristics of Fe-Mn Alloys*, In: Abstracts of **III-rd All-Soviet Union Conferences of Universities on “Physics of Magnetic Materials”**, p. 8, Irkutsk, USSR, 1986
13. **Mekhrabov A.O.**, *Effect of Me= Cr, Nb and Mn third Component Impurity Atoms on the Redistribution of atoms in the  $Ni_3(Fe,Me)$  Alloys*, In: Abstracts of **III-rd All-Soviet Union Symposium on “Nuclear-Spectroscopic Investigations of Hyperfine Magnetic Interactions”**, p. 34, Alma-Ata, Kazakistan SSR, 1989
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1. **Mekhrabov A.O.**, *Worked Examples on Optics and Spectroscopy*, Azerbaijan State Univ. Publ., Baku, Azerbaijan SSR, 1987
2. **Mekhrabov A.O.**, *Deformation of Solid Materials. Theory and Worked Examples*, Azerbaijan State Univ. Publ., Baku, Azerbaijan SSR, 1991

### **3. AWARDS and FELLOWSHIPS**

1. **“Best Scientific Work” Award of Azerbaijan Republic** among young scientist of Azerbaijan for 1981 year.
2. **All-Soviet Union Viziting Researcher Award in Japan**, Japan Society of Promotion for Science (JSPS), University of Tokyo, Dept. of Materials Science and Engineering, Tokyo, Japan, 1984/1985, (1 year).
3. **All-Soviet Union Lecturing&Research Award in the United States of America**, Fulbright Scholar Program, Council for International Exchange of Scholars, University of California at Santa Barbara, Dept. of Chemical and Nuclear Engineering, Santa Barbara, USA, 1991/1992, (4 month).
4. **Member of Union of Chambers of Turkish Engineers and Architects** (1998).
5. He was elected to the **Fellowship** of the **Islamic World Academy of Sciences** in 2000 year, a prestigious award among the scientists of the Muslim countries. There were only 100 number of Fellows from all the Muslim countries of the world.



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## ELMİ-PEDAGOJİ FAALİYƏTİ

İstedadlı alim, fizika-riyaziyyat elmlər doktoru, İslam Dünyası Elmlər Akademiyasının həqiqi üzvü, professor Əmdulla Mehrabov 1952-ci ildə Gürcüstanın Borçalı mahalındakı Bolus rayonunun Saraçlı kəndində anadan olmuşdur. 1969-cu ildə Saraçlı orta məktəbini əlaçı bitirərək Azərbaycan Dövlət Universitetinin (indiki Bakı Dövlət Universiteti) fizika fakültəsinə daxil olmuş və 1974-cü ildə bərk cisimlər fizikası ixtisası üzrə universiteti müvəffəqiyyətlə bitirmişdir. Həmin ildə də Ə.Mehrabov Lomonosov adına Moskva Dövlət Universitetinin (MDU) fizika fakültəsinə bərk cisimlər fizikası (BCF) ixtisası üzrə məqsədli aspiranturaya qəbul olmuş, 1978-ci ildə MDU-da dissertasiya işini yüksək səviyyədə müdafiə etmiş və fizika-riyaziyyat elmləri namizədi elmi dərəcəsi almışdır.

1978-ci ildə Ə. Mehrabov ADU-nun “Optika və Molekulyar fizika” kafedrasında əvvəlcə assistent, sonra baş müəllim, dosent, professor və kafedra müdiri vəzifələrinə qədər yüksəlmişdir. Pedaqoji və ictimai fəaliyyətlə yanaşı, Ə. Mehrabov elmi tədqiqatlarına da ara vermədi və onları daha da intensiv davam etdirdi. 1984-cü ildə professor Ə. Mehrabov elmi-tədqiqat işləri aparmaq və pedaqoji işlə məşğul olmaq üçün Yaponiyaya ezam olundu. Onun Yaponiya səfəri çox uğurlu keçdi. Belə ki, o, Tokio, Osaka, Kioto, Nagoya, Çukubo, Xirosima, Nara və digər şəhərlərdəki universitetlərdə və elmi-tədqiqat mərkəzlərində elmi araşdırmalar apardı. Bütün bunların nəticəsində yapon alimləri ilə ortaq olaraq dünyanın ən məşhur jurnallarında 10-a yaxın məqalə çap etdirdi və 4 beynəlxalq konfransda məruzələrlə çıxış etdi.

1984-1988-ci illər arasında professor Ə. Mehrabov çoxkomponentli metal sistemlərin statistik-termodinamik nəzəriyyəsini elektron nəzəriyyəsi ilə birləşdirərək metallik sistemlərin nəzəriyyəsində yeni bir istiqamətin formalaşdırılmasına imkan yaratdı. Professor Ə. Mehrabov 1989-cu ildə Tbilisi Dövlət Universitetində doktorluq dissertasiyasını müvəffəqiyyətlə müdafiə edərək fizika-riyaziyyat elmlər doktoru alimlik dərəcəsi aldı. Dissertasiya işində əldə olunmuş elmi nəticələrin, fiziki-kimyəvi və

mexaniki xassələri əvvəlcədən məlum ola biləcək yeni və daha üstün xassəli materialların alınması probleminin həllində yeni bir istiqamət açdığı və problemin həlli yollarını göstərərək həm elmi, həm də praktiki cəhətdən çox vacib olduğu xüsusi olaraq qeyd olunmuşdur.

1991-ci ildə Ə. Mehrabov ABŞ-ın Kaliforniya Universitetində bir semestr dərslər və birgə elmi-tədqiqat işləri aparmaq üçün dəvət aldı. Kaliforniya Universitetinin “Nüvə və Kimya Mühəndisliyi” Departamentində 4 ay həm dərslər, həm də elmi-tədqiqat işləri apardı. Magistr və doktorantlar üçün apardığı yüksək səviyyəli dərslər və yerinə yetirdiyi tədqiqat işləri amerikalı həmkarları tərəfindən yüksək qiymətləndirildi. 4 aylıq Amerika səfəri zamanı Ə. Mehrabov Mayamidə keçirilən beynəlxalq konfransda radiasiyanın materialların daxili strukturlarına təsirinə həsr olunmuş məruzələrlə çıxış etdi və 2 elmi məqalə çap etdirdi. Bakı Dövlət Universitetinin məzunu kimi professor Ə. Mehrabov həm Yaponiyaya, həm də Amerikaya səfərləri zamanı Azərbaycan elmini layiqincə təmsil etmişdir.

Professor Ə. Mehrabov 1992-ci ildə Türkiyənin Ankara şəhərindəki dünyanın ən yaxşı 100 Universiteti içərisində yer alan Orta Doğu Texniki Universitetində (ODTU) uzunmüddətli çalışmaq üçün dəvət aldı. 1992-ci ilin sentyabr ayından bugünə qədər o, ODTU-nun mühəndislik fakültəsindəki “Metallurgiya və Materiallar Mühəndisliyi” Departamentində laboratoriya müdürü və professor vəzifəsində çalışır, magistr və doktorantlara dərslər deməklə yanaşı, intensiv olaraq elmi-tədqiqat işlərini də davam etdirir.

Türk həmkarları ilə bərabər, “Yüksək texnoloji materiallarının dizaynı və inkişaf etdirilməsi” (NOVALAB) laboratoriyasını quran Ə. Mehrabov ODTU-da çalışdığı 20 ildən yuxarı müddət ərzində BCF və materiallar bilimi və mühəndisliyinin həm nəzəri, həm də praktiki cəhətdən ən aktual problemlərinin həlli ilə məşğul olur. Professor Ə. Mehrabovun rəhbərlik etdiyi laboratoriya hazırda dünyanın 30-dan çox ölkəsindən 50-dən artıq araşdırma qruplarının və laboratoriyalarının iştirak etdiyi çoxmilyonlu büdcəsi olan və 2014-cü ildə tamamlanması planlaşdırılan “Nanoərintilər- yeni qrup üstün xassəli materiallar: strukturu, xassələri və tətbiq olunma sahələri” layihəsində Türkiyəni və ODTU-nu layiqincə təmsil etməkdədir.

Bütün bu qeyd olunanlarla yanaşı, professor Ə. Mehrabov eyni zamanda, BCF və materiallar bilimi və mühəndisliyinin aktual problemlərinin həll olunmasına yönəlmiş, Türkiyə-Azərbaycan, Türkiyə-Ukrayna və Türkiyə-Rusiya elmi-tədqiqat layihələrinin təşkil olunmasında, hazırlanmasında və müvəffəqiyyətlə aparılmasında mühüm rol oynamışdır.

Professor Ə. Mehrabovun dünyanın ən məşhur jurnallarında və beynəlxalq konfransların materialları kitablarında çap olunmuş 200-ə yaxın sanballı elmi məqaləsinə 500-dən artıq istinadlar verilmişdir. Elmi-tədqiqat işləri ilə yanaşı, professor Ə. Mehrabov qardaş Türkiyə Respublikasında yüksək səviyyəli elmi-texniki kadrların hazırlanmasında da yaxından iştirak edir. Türkiyədə çalışdığı müddətdə onun rəhbərliyi altında 20-dən çox magistr və doktorant elmi işlərini tamamlayaraq elmi dərəcələr almışlar. Bundan başqa,

professor Ə. Mehrabov Türkiyənin bir çox dövlət və özəl şirkətlərində məsləhətçi olaraq da fəaliyyət göstərməkdədir.

Bərk cisimlər fizikası və materiallar bilim və mühəndisliyi sahələrində əldə etdiyi böyük nailiyyətlər nəzərə alınaraq, professor Ə. Mehrabov 2000-ci ildə gizli səsvermə yolu ilə yekdilliklə bütün dünya müsəlmanlarının akademiyası sayılan İslam Dünyası Elmlər Akademiyasına həqiqi üzv və 2009-cu ildə isə Akademyanın illik toplantısında Yönetim Kurulu (Council Member) üzvü seçilmişdir.

Bununla yanaşı, professor Ə. Mehrabov ABŞ-da, Türkiyədə və dünyanın bir çox ölkəsində fəaliyyət göstərməkdə olan akademiya və cəmiyyətlərə həqiqi üzv seçilmişdir. Onun həyat və fəaliyyəti, ABŞ-da çap olunan “Marquis Who’s Who” biblioqrafik ensiklopediyasının “Elm və mühəndislikdə kim kimdir” kitabının 8-ci (2005-2006) çapında yer almışdır. Qeyd edək ki, bu kitabda dünyanın hər yerindən elm və mühəndislikdə böyük nailiyyətlər qazanmış 25000 elm adamının adı verilmişdir.

Professor Ə. Mehrabov həm də yaxşı ailə başçısıdır. Onun üç övladı, bir qızı, iki oğlu vardır. Övladlarının hamısı universitet təhsili almışlar. Həyat yoldaşı—tibb doktoru Ramilə Mehrablı (Mehrabova) Türkiyə Cümhuriyyətinin Böyük Millət Məclisində təcili yardım doktoru olaraq çalışır.

Tədris və elmi araşdırmalarla bərabər, professor Ə. Mehrabov Türkiyənin Ankara şəhərində həm Azərbaycan səfirliyinin, həm də Azərbaycan diasporunun keçirdiyi tədbirlərin təşkilində yaxından iştirak edir, mətbuatda çıxışlar edərək Azərbaycan həqiqətlərinin qardaş Türkiyə ictimaiyyətinə çatdırılmasında və Azərbaycanın muasir imicinin formalaşmasında gərgin əmək sərf etməkdədir.

Prof. Dr. Ə. Mehrabov’un rehberliyində tamamlanan və davam etməkdə olan **Mastera və Doktora tez çalışmaları** aşağıda verilməkdədir:

- **Direct casting of Fe-Al intermetallics**, Murat Özbayramoğlu (Eylül 95'te tamamlanmışdır)
- **Phase Stability and Ordering Processes in Fe-Al Intermetallics**, İlhami Aktürk (Haziran 1996'da tamamlanmışdır)
- **Monte Carlo Study of Fe<sub>3</sub>Al Based Intermetallics**, Murat Arer (Eylül 1996'da tamamlanmışdır)
- **Production of Fe based alloys as reinforcement in Al matrix composites**, Fatma Ağdaş (Şubat 1997'de tamamlanmışdır)
- **Monte Carlo Study of Ni<sub>3</sub>Al Based Intermetallics**, Mehmet Emin Atalar (Eylül 1998' de tamamlanmışdır)
- **Synthesis and Characterization of Non-Ferrous based Bulk Amorphous Alloys**, H. Melih Türkeş, (Eylül 2001'de tamamlanmışdır)

- **Structural Characterization of the Mg-Ni-X Hydrogen Storage Alloys**, E. Akşit, (Ağustos 2003'de tamamlanmıştır)
- **Synthesis and Characterization of the Ti-based Bulk Amorphous/Nanocrystalline Alloys for Engineering Applications**, A. Abdelal, (Ocak 2004'de tamamlanmıştır)
- **Synthesis and Characterization of Bulk Glass-forming Iron-Boron based Alloy systems**, S. Gürbüz, (Haziran 2004'de tamamlanmıştır)
- **Synthesis and Characterization of the Ni-based Bulk Amorphous Alloys**, H. Arslan, (Haziran 2004'de tamamlanmıştır)
- **Investigation of Solidification and Crystallization of Fe-based Bulk Amorphous Alloys**, E. Erdiller, (Ocak 2004'de tamamlanmıştır)
- **Synthesis and Characterization of the Zr-based Bulk Amorphous Alloys**, İ. Saltoğlu, (Ocak 2004'de tamamlanmıştır)
- **Theoretical and Experimental Investigation of Bulk Glass Forming Ability in Bulk Amorphous Alloy Systems**, C. Ayas, (Ocak 2005'de tamamlanmıştır)
- **Solidification and Crystallization Behavior of Bulk Glass Forming Alloys**, S. Aybar, (Eylül 2007'de tamamlanmıştır)
- **Investigation on Bulk Glass Forming Ability of Ti-based Multicomponent Alloys**, S. Süer (Haziran 2008'de tamamlanmıştır)
- **Theoretical and Experimental Investigations on Atomic and Magnetic Ordering in Full Heusler Alloys**, C. Topbaşı, (Haziran 2008'de tamamlanmıştır)
- **Nano-scale Phase Separation and Glass Forming Ability of Fe-B based Metallic Glasses**, M. Aykol, (Eylül 2008'de tamamlanmıştır)
- **Phase Transformations and Magnetic Properties of Heusler-type Multicomponent Alloys**, M. Kalkanci, (Eylül 2011'de tamamlanmıştır)
- **Magnetic Monitoring Approach to Kinetics of Phase Transformations in Multicomponent Alloy Systems**, N. Duman, Ph.D. Thesis, Middle East Technical University, Ankara, Turkey, (Mart 2012'de tamamlanmıştır)
- **Synthesis and Characterization of Copper Based Bulk Amorphous Alloys**, E. Mermer, (Temmuz 2013'de tamamlanmıştır)
- **Production and Structural Characterization of Fe-B Nanoalloys**, A. Fadaie, (Ocak 2014'de tamamlanmıştır)
- **Aluminides for High-Temperature Applications**, M. Yıldırım, Ph.D. Thesis, Middle East Technical University, Ankara, Turkey, (2006- in progress)
- **Design and Development of Novel Intermetallic Alloys**, M. Aykol, Ph.D. Thesis, Middle East Technical University, Ankara, Turkey, (2008- in progress)
- **Design and Development of Co-based Multicomponent Bulk Amorphous/Nanocrystalline Magnetic Materials**, T. Güngören, Ph.D. Thesis, Middle East Technical University, Ankara, Turkey, (2008- in progress)
- **Production and Structural Characterization of Fe-Pt Nanoalloys**, M. Yalçın, (2011- in progress)
- **Bulk Amorphous/Nanocrystalline Materials: Structural Amorphous Steels**, B. Yağmurlu, (2012- in progress)
- **Assesment and Manufacturing of Ti-Cu based Bulk Metallic Glasses that are used for Medical applications**, A. Alkan, Ph.D. Thesis, Middle East Technical University, Ankara, Turkey (2012- in progress)

- **Modelling and Simulation of Structure-Property Correlations for Nickel Based Nanoalloys**, S. Mut, (2013- in progress)

Prof. Dr. Ə. Mehrabov'un yönetici veya araştırmacı olarak görev aldığı projelerin listesi aşağıda verilmektedir:

- **Modelling of Structure-Property Correlations, Production via Mechanical Nanoalloying and Characterization of Intermetallic and Metallic Glass Nanoalloys**, COST-MP0903- TUBİTAK project, 2010- 2014
- **Design and Development of Co-base Multicomponent Bulk Amorphous Nanocrystalline Alloys**, Graduate School of Natural and Applied Sciences, METU, BAP Project, **Project No.: BAP-03-08-2010-07**, 2010- 2012
- **Linyit Esaslı Termik Santrallerde Hasar Analizi ve Malzeme İyileştirme Çalışmaları**, State Planning Organization (DPT) Project, **BAP-03-08-DPT.2007K120220**, 2007- 2010
- **Development of Magnetic Materials For Civil and Military Applications-1: Magnetic Refrigerators**: State Planning Organization (DPT) Project, **BAP-03-08-DPT.2003(06)K120920-19**, 2006- 2008
- **Synthesis and Characterization of the Ti-Zr-based Multicomponent Amorphous/Nanocrystalline Alloys**, Graduate School of Natural and Applied Sciences, METU, BAP Project, **Project No.: BAP-2006-07-02-00-01**, 2006- 2007
- **Development of Boron-based Bulk Amorphous/Nanocrystalline Materials for Applications in Power Transformer & Automotive Electronics Industries**, National Bor Investigation Institute (BOREN)-TUBİTAK Project, **Project No.: 105M354**, 2006- 2008
- **Modelling, Development and Characterization of Multicomponent Aluminides for High Temperature and Structural Applications**, European Cooperation in the field of Scientific and Technical Research-COST, TUBİTAK, **COST Action 535, MAG-COST535- 104M223**, 2005- 2008
- **Development of Mathematical Models for the Description of Non-Isothermal Transformations in Steels**, Turkish-Hungarian Joint Project, TUBİTAK, **MISAG-HUN2**, (2003-2005)
- **Monte Carlo Simulation of Atomic Ordering Processes in Bulk Amorphous/Nanocrystalline Alloys**, Graduate School of Natural and Applied Sciences, METU, BAP Project, **Project No.: BAP-2003-07-02-00-57** ( May 2003- 2005)
- **Metallic Glasses for Industrial Applications**, DPT project, **Project No.: AFP-03-08-DPT.98K122560** (April 1998- June 2003)
- **Synthesis and Characterization of the Fe-based Bulk Amorphous and Nanocrystalline Magnetic Alloys**, Graduate School of Natural and Applied Sciences, METU, BAP Project, **Project No.: BAP-2002-07-02-00-111** (April 2002- May 2004)
- **Synthesis and Characterization of the Ti-based Bulk Amorphous and Nanocrystalline Alloys for Engineering Applications**, Graduate School of Natural

and Applied Sciences, METU, BAP Project, **Project No.: BAP-2002-07-02-00-45** (April 2002- May 2004)

- **Solidification and Crystallization Kinetics of the Fe-based Bulk Amorphous and Nanocrystalline Alloys**, Graduate School of Natural and Applied Sciences, METU, BAP Project, **Project No.: BAP-2002-07-02-00-46** (April 2002- May 2004)
- **Synthesis and Characterization of the Ni-based Bulk Amorphous Alloys**, Graduate School of Natural and Applied Sciences, METU, BAP Project, **Project No.: BAP-2002-07-02-00-44** (April 2002- May 2004)
- **Synthesis and Characterization of the Zr-based Bulk Amorphous Alloys**, Graduate School of Natural and Applied Sciences, METU, BAP Project, **Project No.: BAP-2002-07-02-00-108** (April 2002- May 2004)
- **Synthesis and Development of the Fe-based Bulk Metallic Materials**, Graduate School of Natural and Applied Sciences, METU, AFP Project, **Project No.: AFP-99.06.02.16** (May 1999-2002)
- **Synthesis and Characterization of Nonferrous-based Bulk Amorphous Alloys**, Graduate School of Natural and Applied Sciences, METU, **Research Student Support Programme (AGDP)** (September 1999-2002)
- **Design and Development of High-Alloy Steels for Applications in Petroleum and Petrochemical Industries**, Turkish-Azerbaijan Joint Research Project, **TUBİTAK-DORPOG** (1994-1998)
- **Development of Intermetallic Reinforced Al Laminates for Structural Applications**, TUBİTAK Project, **MİSAG-67** (1994-1996)
- **Modeling and Estimation of Interfacial Energies in Intermetallic Reinforced Al Metal Matrix Composites**, AFP Project, **Project No.: AFP-03-08-04** (1993-1994)

Prof. Dr. Ə. Mehrabov 'un gerçeleştirmiş olduğu yayınlarının listesi ekte verilmektedir.