



Vanja Asanovic

Nationality: Montenegrin **Date of birth:** 14/10/1966 **Gender:** Female

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ABOUT ME

Teaching experiences: field of material science and environmental management.

Expertises and reports: environmental protection.

My research addresses several topics: mechanochemical synthesis, nanocomposites, materials for hydrogen storage, phase change materials, shape memory alloys, Cu-based alloys, steels and aluminium alloys, materials characterization, environmental protection, waste management.

I was the first director of the Bureau of Metrology since its establishment in 2006. I was focused on establishing national calibration laboratories, developing services in legal, industrial and scientific metrology, and controlling precious metal articles in Montenegro. I represented the Bureau of Metrology and Montenegro in metrological international and regional organizations until February 2021.

WORK EXPERIENCE

Vice Dean for for Scientific Research and International Cooperation

[10/2024 – Current]

Full Professor (Full-time)

University of Montenegro, Faculty of Metallurgy and Technology [15/12/2021 – Current]

City: Podgorica | Country: Montenegro

Teaching at undergraduate and specialist studies at the Faculty of Metallurgy and Technology:

Courses: *Phase Transformation, Structure of Alloys, Physics of strength and plasticity, Materials Characterization, Kinetics and Mechanism of Phase Transformations, Electron Microscopy and X-ray analysis, Crystallography, Crystallography and Diffraction, Physical Metallurgy (selected topics) and Physics of Materials* (Study programme: Metallurgy and Materials).

Teaching at master and doctoral studies:

Course: *Dispersion modelling of pollutants* (Master study at the Faculty of Metallurgy and Technology, Study programme: Environmental Protection)

Courses: *Phase Transformations (selected chapters), Thermodynamics (higher level) and Design and Strengthening Mechanisms in Materials* (Doctoral study at the Faculty of Metallurgy and Technology).

Research areas: *physical metallurgy, phase transformation in metals and alloys, electron microscopy, optical microscopy, shape memory alloys, phase change materials, hydrogen storage, nanocomposites, environmental protection, waste management.*

Full Professor (part-time)

University of Montenegro, Faculty of Metallurgy and Technology [10/2021 – 12/2021]

City: Podgorica | Country: Montenegro



Courses: *Phase Transformation, Materials Characterization, Kinetics and Mechanism of Phase Transformations, Electron Microscopy and X-ray analysis, Crystallography, Crystallography and Diffraction Physical Metallurgy (selected topics) and Physics of Materials* (Study programme: Metallurgy and Materials).

Course: *Waste Management* (Study programme: Environmental Protection).

Course: *Metrology* (Master study at the Faculty of Mechanical Engineering)

Courses: *Phase Transformations (selected chapters) and Design and Strengthening Mechanisms in Materials* (Doctoral study at the Faculty of Metallurgy and Technology, Study programme: Metallurgy and Materials).

Research areas: *physical metallurgy, phase transformation in metals and alloys, electron microscopy, optical microscopy, shape memory alloys, phase change materials, hydrogen storage, nanocomposites, environmental protection, environmental quality, waste management.*

Full Professor (part-time)

University of Montenegro, Faculty of Metallurgy and Technology [01/09/2010 – 11/02/2021]

City: Podgorica | Country: Montenegro

Teaching (courses: *Phase Transformation, Materials Characterization, Kinetics and Mechanism of Phase Transformations, Electron Macroscopy and X-ray analysis, Physics of Materials, Physical Metallurgy (selected topics), Waste Management, Metrology, Phase Transformations (selected chapters) and Design and Strengthening Mechanisms in Materials.*)

Research areas: physical metallurgy, phase transformation in metals and alloys, electron microscopy, optical microscopy, shape memory alloys, phase change materials, hydrogen storage, mechanochemistry, environmental protection, environmental quality and waste management.

Full Professor (full-time)

University of Montenegro, Faculty of Metallurgy and Technology [02/2009 – 01/09/2010]

City: Podgorica | Country: Montenegro

Teaching courses: *Phase Transformation, Materials Characterization, Waste Management.*

Research areas: physical metallurgy, phase transformation in metals and alloys, electron microscopy, optical microscopy, shape memory alloys, environmental protection, waste management.

Director

Bureau of Metrology [10/2006 – 02/2021]

City: Podgorica | Country: Montenegro

I was on the head of the expert team that established the Centre of Metrology in July 2006. As an acting director of new formed Bureau of Metrology, I have performed all necessary duties for establishing the metrological traceability and organizing the working procedures in the field of legal, scientific and industrial metrology as well as control of precious metal articles. One of the most critical issues was establishing the national calibration laboratories within the Bureau of Metrology in which the measurement standards of Montenegro are realised, preserved, maintained, and improved. The documentation for verifying the fulfilment of the requirements for performing the calibration of measuring instruments/measurement standards in the Bureau's laboratories was prepared by an expert team which I have led.

The most important results that were achieved in the period since the establishment of the Bureau of Metrology on September 14, 2006, up to February 11, 2021, are as follows:

- established metrological traceability in Montenegro;
- harmonisation of legislation in the field of metrology with the legislation of the European Union;
- establishment of national calibration laboratories in which Montenegrin standards are realised, stored, maintained and improved;
- confirmation of competence for performing calibration of measuring instruments/measurement standards in the laboratories of the Bureau;



- meeting the criteria for membership in international and regional organisations in the field of metrology and control of precious metal articles;
- signing the CIPM Arrangement on Mutual Recognition of Calibration and Measurement Certificates issued by the national metrological institutes of the Member States to remove technical barriers to trade;
- realisation of the Montenegrin second and participation in the realisation of UTC;
- publishing the 24 best measurement and calibration capabilities (CMC) in the database of the International Bureau of Weights and Measures KCDB-BIPM based on successful participation in interlaboratory comparisons;
- license for performing scientific research activities in the field of technical-technological and interdisciplinary sciences and registration of the Bureau in the register of innovative organisations.

From 2007 to February 2021, I have presented Montenegro and the Bureau of Metrology in the different regional and international metrological organizations as a delegate and member of varying working bodies.

I participated in preparing draft laws and bylaws in the field of metrology, draft Metrology Development Strategy in Montenegro for the period 2016-2018.

Associate Professor

University of Montenegro, Faculty of Metallurgy and Technology [12/2003 – 02/2009]

City: Podgorica | Country: Montenegro

Teaching (courses: Phase Transformation, Materials Characterization, Kinetics and Mechanisms of Phase Transformations, Waste Management)

Research areas: physical metallurgy, phase transformation in metals and alloys, electron microscopy, optical microscopy, shape memory alloys, environmental protection.

Assistant Professor

University of Montenegro, Faculty of Metallurgy and Technology [10/1998 – 12/2003]

City: Podgorica | Country: Montenegro

Teaching (courses: Physical Metallurgy, Phase Transformation, Materials Characterization, Kinetics and Mechanisms of Phase Transformations)

Research areas: physical metallurgy, phase transformation in metals and alloys, electron microscopy, optical microscopy, shape memory alloys.

Assistant

University of Montenegro, Faculty of Metallurgy and Technology [06/1995 – 10/1998]

City: Podgorica | Country: Montenegro

Teaching (courses: Metallography, Heat Treatment, Materials, Materials in Mechanical Engineering)

Research areas: physical metallurgy, phase transformation in metals and alloys, optical microscopy, Cu-based shape memory alloys, deformation.

Trainee Assistant

University of Montenegro, Faculty of Metallurgy and Technology [02/1991 – 06/1995]

City: Podgorica | Country: Montenegro

Experimental laboratory work and exercises (courses: Metallography, Heat Treatment, Materials, Materials in Mechanical Engineering)

Research areas: physical metallurgy, phase transformation in metals and alloys, optical microscopy, Cu-based shape memory alloys, cold rolling.



EDUCATION AND TRAINING

PhD

University of Montenegro, Faculty of Metallurgy and Technology [03/1998]

City: Podgorica | Country: Montenegro

MSc

University of Montenegro, Faculty of Metallurgy and Technology [11/1990 – 07/1994]

City: Podgorica | Country: Montenegro

BSc

University of Montenegro, Faculty of Metallurgy and Technology [10/1985 – 06/1990]

City: Podgorica | Country: Montenegro

LANGUAGE SKILLS

Other language(s):

English

LISTENING C1 READING C1 WRITING C1

SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

RECOMMENDATIONS

RECENT PROJECTS

1. *Design of innovative filters based on pyrophyllite for the sorption of dyes from wastewater - CLAYCATCH*, Proof of Innovative Concept Program, Innovation Fund of Montenegro, 02/2025-02/2026 (project manager)
2. *Development of Hydrogen Compressors (NO-DEPENDENCE)*, NATO Science for Peace and Security, 06/2023-06/2026 (project manager)
3. *MONtenegrin center for Underwater SEnsor Networks – HORIZON-WIDERA-2021-ACCESS-02*, 2022-2025 (team member)
4. *CiRcular Economy Skills enhanCEment NeTwOrk - CRESCENTO*, Adriatic-Ionian ADRION Programme, 01/2023 – 09/2023 (project manager)
5. *Composites for all advanced materials for a modern, improved, and sustainable society – CEI Know-how Exchange Programme*, 2021-2022 (team member)
6. *Towards hydrogen economy: Synthesis and characterization of phase change materials for thermal energy storage*, Ministry of Science, *bilateral project* 2019-2021 (project manager)

International projects in the field of environmental protection

1. **Person responsible for report:** Data Sheets for Vehicle Fuels and Emissions Country Assessment under projects: Capacity Building for Improvement of Vehicle Fuel Quality in the SEE Countries and Addressing Clean Fuel and Vehicles Issues in Central and Eastern Europe and Turkey (REC, 2005).
2. **Engaged expert:** Developing activities for Protocol on Pollutant Release and Transfer Registers – PRTR Protocol in Montenegro, Aarhus project (REC, 2006).
3. **Engaged expert:** Report of Implementation of the European Parliament and of the Council Providing for Minimum Criteria for Environmental Inspection in Montenegro (REC, 2006).



4. **Engaged expert:** Program for Capacity Building for Implementing the Law on Environmental Impact Assessment, Strategic Environmental Assessment and Integrated Prevention and Pollution Control in Montenegro - Guide for Implementation of the Law on Integrated Pollution Prevention and Control (REC, 2009)
5. **A representative of the Faculty of Metallurgy and Technology in the project NEWEN** aimed to develop a network and transboundary cooperation in environmental management between the six participating Universities in the Western Balkans (WB) and the participating Universities and institutes in the Netherlands. Project NEWEN ran from October 2008 to May 2011 and was financially supported by the Dutch Ministry of Foreign Affairs.
 - *The first regional Workshop on Urban Solid Waste Management (11-12 June, 2009, Durres, Albania).*
 - *Tailor made course for University staff: Course on Hazardous Waste Management (21-25 September 2009, Delft, Netherlands).*
 - *The third regional workshop on Lake Pollution Management (8-9 March 2010).*
6. **Junior short term expert:** Regional Environmental Network for Accession (RENA), Europe Aid/128906/C/SER/Multi (2013)
7. **Engaged expert:** Environment and Climate Regional Accession Network – ECRAN (2014)
8. **Engaged expert:** Waste management in Montenegro: Preliminary Activities for Preparation of Waste Management Plan (2015).

Selected papers in international journals:

1. Sekulić Z., Grbović Novaković J., Babić B., Prvulović M., Milanović I., Novaković N., Rajnović D., Filipović N., **Asanović V.**, "The Catalytic Effect of Vanadium on Sorption Properties of MgH₂-Based Nanocomposites Obtained Using Low Milling Time", *Materials*, 2023, 16, 5480. <https://doi.org/10.3390/ma16155480>.
2. Herenda S., **Asanović V.**, Hasković E., Radonjić D., Šćepanović J. "In vitro biomedical corrosion and enzyme activity inhibition on modified Cu-Zn-Al bioalloy". *Corrosion Reviews*, vol. 41, issue 4 (2023) 443-454.
3. **Asanović V.**, Radonjić D. Šćepanović J., Vuksanović D., "Effect of chemical composition and quenching media on recoverable strain in Cu-Zn-Al alloys," *Journal of Materials Research and Technology*, Vol 12, May-June 2021, pp. 1368-1379.
4. Vuksanović D., **Asanović V.**, Sćepanović J., Radonjić D., "Effect of chemical composition and T6 heat treatment on the mechanical properties and fracture behavior of Al-Si alloys for IC engine components," *Journal of Mining and Metallurgy*, Section B: Metallurgy, Vol. 57(2), 2021, pp. 195-207, ISSN 1450-5339 (print), ISSN 2217-7175 (online), doi: 10.2298/JMMB190510014V.
5. Sćepanović J., **Asanović V.**, Radonjić D., Vuksanović D., Herenda S., Korac F., Bikic F., "Mechanical properties and corrosion behaviour of Al-Si alloys for IC engine," *J. Serb. Chem. Soc.*, Vol. 84, Issue 5, 2019, pp. 503-516, DOI: <https://doi.org/10.2298/JSC190306030S>
6. Sćepanović J., **Asanović V.**, Herenda S., Vuksanović D., Radonjić D., Korac F., "Microstructural Characteristics, Mechanical Properties, Fracture Analysis and Corrosion Behavior of Hypereutectic Al-13.5Si Alloy," *International Journal of Metalcasting*, Vol 13, Issue 3, 2019, pp. 700-714.
7. **Asanović V.**, Raonić M., Cuturic-Knezevic N., Vukoslavovic G., Popovic M., Jestrovic V., "Quality system implementation in the National Metrology Institute of Montenegro," *Accreditation and Quality Assurance*, Vol. 23, No. 2, Apr 2018., pp. 87-96.
8. **Asanović V.**, Delijić K., Jauković N., "A Study of Transformations of β -phase in Cu-Zn-Al Shape Memory Alloys", *Scripta Materialia*, Vol 58., Issue 7, 599-601 (2008).
9. **Asanović V.**, **Delijic K.**, "The mechanical behavior and shape memory recovery of Cu-Zn-Al alloys", *Journal of Metallurgy*, No 5, vol. 13, (2007), pp. 59-64, ISSN 0354-6306
10. **Asanović V.**, Delijić K., "The Fabrication and Heat-treating of Cu-based Alloy for Shape Memory Plates", *The International Journal for Manufacturing Science and Production*, Vol. 7, No. 1 (2006) pp. 61-72, Freund Publishing House Ltd., Israel.



11. **Asanović V.**, Delijić K., Jauković N., Isothermal decomposition of the beta phase in Cu-Zn-Al shape-memory alloys², *Materials and Technology*, 40 (4), (2006) pp. 153-156.
12. **Asanović V.**, Delijić K., Leka Z., Bošnjak B., "The Effect of Heat Treatment on the Martensitic Transformation and Properties of Cu-Zn-Al Alloy", *Journal of the Mechanical Behavior of Materials*, Vol. 15, Nos. 4-5 (2004) pp. 219-238, Freund Publishing House Ltd., Israel.

Selected papers presented at international scientific conferences:

1. Sekulić Z., Grbović Novaković J., Vujačić Nikezić A., Medić Ilić M., Novaković N., Paskaš Mamula B. and **Asanović V.**, "Hydrogen storage properties of MgH₂-Mo system", Metal-Hydrogen Systems Conference, Saint-Malo, May 26 – 31, 2024, poster session.
2. Herenda S., Begović M., Hasković E., **Asanović V.**, "The Effect of Cysteine of the Corrosion Characteristics of Bioalloy", 14th Scientific/Research Symposium with International Participation "Metallic and Nonmetallic Materials", B&H, 27th-28th April 2023.
3. Sekulić Z., Grbović Novaković J., Babić B., Prvulović M., Milanović I., Tošić K., **Asanović V.**, "Hydrogen storage properties of MgH₂-M (M=Ni, V, Cr) composites," Book of Abstracts, 6 *International Symposium of Materials for Energy Storage and Conversion mESC-IS 2022*, 5-8 July 2022, Bol, Island of Brac, Croatia.
4. Sekulić Z., Milanović I., Babić B., Prvulović M., Grbović Novaković J., **Asanović V.**, "Mechanochemical synthesis of MgH₂ -V nanocomposites," *Twenty-third Annual Conference YUCOMAT 2022 & Twelfth World Round Table Conference on Sintering WTRCS Program and the Book of Abstracts*, Materials Research Society of Serbia, August 29 – September 2, 2022, Herceg Novi, Montenegro, poster presentation P.S.III.C.14., p. 137.
5. Sekulić Z., Milanović I., Babić B., Prvulović M., Grbović Novaković J., **Asanović V.**, "Mechanochemical Destabilization of MgH₂-V Nanocomposites for Hydrogen Storage," Book of Abstracts, *10th International Conference of Applied Science*, 25-28 May 2022, Banja Luka, pp. 78.
6. Vuksanovic D., **Asanovic V.**, Cvijovic Z., Scepanovic J., Radonjic D. "Microstructure and fracture analysis of T6 treated hypereutectic Al-13.5Si alloy for IC engine components," MCM2019, 14th Multinational Congress on Microscopy, Belgrade, Serbia, September 15-20, 2019, p. 357-359.
7. Bulatovic N., Vukicevic T., Sabotic R., **Asanovic V.**, "Measurements Calibration Analysis of Novel IoT Platforms," XXII međunarodni naučno-stručni skup INFORMACIONE TEHNOLOGIJE – sadašnjost i budućnost 2017, Žabljak, pp. 165-168. ISBN 978-86-85775-20-8.
8. Šćepanović, D. Radonjić, D. Vuksanović, **V. Asanović**, "Selection of modern technology in the process of municipal waste disposal", XX YuCorr, May 21-24, 2018, Tara Mountain, Serbia, pp. 173-178. ISBN 978-86-82343-26-4.
9. **Asanovic V.**, Delijic K., "The Effects of Aging on the Martensitic Transformation Temperature and Shape Memory Recovery of Cu-25,7Zn-3,1Al Alloy", International Scientific Conference Contemporary Materials 2012, Banja Luka, July 2012, poster presentation.
10. **Asanović V.**, Jauković N., Delijić K., "Quenching effects in Cu-based shape memory alloy", *8th International Symposium of Croatian Metallurgical Society SHMD 2008*, Sibenik, Hrvatska, jun 22-26, poster presentation, section A.
11. **Asanović V.**, Delijić K., Jauković K., "A Study of transformations of b-phase in Cu-Zn-Al shape memory alloys", *The Book of Abstracts of Materials Today Asia*, Beijing, China, September 3-5, 2007, poster presentation P2.63.
12. **Asanovic V.**, Delijic K., Jaukovic N., "Heat treatment effects in a copper based shape memory alloy", *The Eight YU Materials Research Society Conference*, Herceg Novi, Sept 2006, Proc p.113, ISBN 86-80321-09-5, poster presentation.

Name: Guide

Asanović V., Asanović D., Tošić S. Guide for the implementation of the Law on Integrated Prevention and Control of Environmental Pollution, REC Office in Montenegro, (2009) 120 pages, ISBN 978-86-909417-7-3.



Name: COST Actions

- CA18112: *Mechanochemistry for Sustainable Industry*, 2020-2023 (MC member);
- CA18224: *Green Chemical Engineering Network towards upscaling sustainable processes*, 2020 – 2024 (MC member);
- CA19118: *High-performance Carbon-based composites with Smarth properties for Advanced Sensing Applications*, 2021-2024 (MC member).

HONOURS AND AWARDS

[12/2023] University of Montenegro

Award of the University of Montenegro

Award of the University of Montenegro for exceptional contribution to the development of scientific research and the international reputation of the University of Montenegro

ACADEMIC VISITOR

Academic visitor

Oxford Colleges Hospitality Scheme (Keble College, Department of Materials, Oxford, July 2006.)

KEY QUALIFICATIONS

Key qualifications

Besides scientific research and teaching, I have more than fourteen years of experience managing the Bureau of Metrology. I participated in the EC-Montenegro Sub-Committee and Sectoral EPD meeting on Trade, Industry, Customs, Taxation and Cooperation with other candidate countries from 2007 to 2018. The main topics were

- horizontal and procedural measures for metrology;
- the latest development concerning administrative capacity and infrastructure in order to fulfill the obligations of art 77 of the Stabilisation and Association Agreement properly;
- legislative alignment with the new and global approach directives and legislative alignment with the old approach directives.

I have participated in preparing the section related to metrology for the National Program for Integration of Montenegro into the EU (NPI) for the period 2008 - 2012. I participated in preparing the draft laws and bylaws in the field of metrology to harmonize the legislation in the field of metrology with the legislation of the European Union. Besides, I was a member of the team that prepared a draft of the Metrology Development Strategy in Montenegro for the period 2016-2018, communication strategies, and quality management system documentation.

From 2009 to February 2021, I presented Montenegro and the Bureau of Metrology as a delegate in the WELMEC Committee and a member of the Working group 8 related to the general application of MID and NAWID within the European Cooperation in Legal Metrology (WELMEC).

I have been an engaged expert in different international projects in the field of environmental protection in Montenegro.

NETWORKS AND MEMBERSHIPS

[2022 – Current] Montenegro

Expert (academic staff) for accreditation of study programs, i.e. re-accreditation of higher education institution (Agency for Control and Quality Insurance of Higher Education)



[2021 – Current] Montenegro

**A prominent expert in evaluating competencies, knowledge and abilities in the process of employment
(Human Resources Management Authority)**

ORGANISATIONAL SKILLS

Organisational skills

Planning, teamwork, communication, decision making, strategic planning, open-mindedness, problem-solving, and strong working ethic.

DIGITAL SKILLS

Microsoft Office (Microsoft Word Microsoft Publisher Microsoft PowerPoint Microsoft Excel) / Social Media /
Komunikacijski alati (Skype Zoom) / Corel (CorelDRAW, Corel VideoStudio)

OTHER SKILLS

**Communication, leadership, organization, writing, collaboration, strategic planning, open-mindedness,
problem-solving, and strong working ethics.**