


Curriculum Vitae

Personal Information	Name	MIROSLAW BONEK	Gender	MALE	
	Academic Title	ASSOCIATED PROFESSOR			
	College	SILESIA UNIVERSITY OF TECHNOLOGY			
	Discipline	MATERIALS ENGINEERING			
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Educational Background	<p>MSc, Eng - Mechanical Engineering, 1998, Silesian University of Technology, Gliwice, Poland</p> <p>PhD - Mechanical Engineering, 2003, Silesian University of Technology, Gliwice, Poland</p> <p>DSc - Mechanical Engineering, 2019, Silesian University of Technology, Gliwice, Poland</p>				
Working Experience	<p>1998 – 2003, assistant in the Institute of Engineering Materials and Biomaterials, Faculty of Mechanical Engineering, Silesian University of Technology, Gliwice</p> <p>2003 – 2019, assistant professor in the Institute of Engineering Materials and Biomaterials, Faculty of Mechanical Engineering, Silesian University of Technology, Gliwice</p> <p>2019 – present, associated professor in the Department of Engineering Materials and Biomaterials, Faculty of Mechanical Engineering, Silesian University of Technology, Gliwice</p>				
Research Interests	<p>My work in scientific discipline “Materials Engineering” concerns the description of mechanisms having an effect on structural changes, mechanical and functional properties of alloy steels used for tools by laser treatment consisting of remelting and alloying/cladding carbide, oxide and nitride powders, as well as preparation and practical use of procedural methodology for designing appropriately and selecting the conditions of the technological process of surface treatment of tool materials, which creates an opportunity for their use in the future as tool materials for machines and equipment parts. The synergism of the effect of surface layer modification processes in the laser remelting and alloying process with dispersion hardening by introducing the particles, made it possible to achieve a marked improvement of mechanical properties and enhanced resistance to abrasion. The utilisation of alloying and laser cladding is in consistency with the currently pursued research works and allows to improve functional properties of alloy steels used for tools, and also brings considerable savings due to relatively low substrate costs, and due to enhanced properties of the surface of the tools produced from such a material composition, accompanied by relatively high tool core ductility. For the selected research and experimental fields, based on the knowledge assembled in the area of materials engineering, I have performed numerous investigations concerning the structure and properties of metallic materials, including tool steels, stainless steels, aluminium alloys and magnesium alloys.</p>				
Major Publications*	<ol style="list-style-type: none"> Bonek M., Tillova E.: Tribological characteristic of tool steel surface layer alloyed using laser, Advances in laser material processing, Solid State Phenomena Vol. 308, ISSN: 1662-9779, s. 110-118, 2020, Kuchariková L., Liptáková T., Tillová E., Bonek M., Medvecka E.: Corrosion behaviour correlation of the secondary aluminium casts in natural atmosphere and laboratory conditions, Archives of Metallurgy and Materials, 65(4), 2020, s. 1455-1462, Woźniak A., Adamiak M., Chladek G., Bonek M., Walke W., Bialas O.: The influence of hybrid surface modification on the selected properties of CP titanium Grade II manufactured by selective laser melting, Metals, vol. 13 iss. 12, 2020, s. 1-22, 				

	<p>4. Krupiński M., Smolarczyk P., Bonek M.: Microstructure and properties of the copper alloyed with Ag and Ti powders using fiber laser, <i>Materials</i>, vol. 13 iss. 11, 2020, s. 1-13,</p> <p>5. Bonek M: The investigation of properties of high-speed steel after laser surface treatment, <i>Archives of Metallurgy and Materials</i>, 63(1), 2018, s. 227-233,</p> <p>6. Bonek M., Śliwa A., Mikuła J.: Computer simulation of the relationship between selected properties of laser remelted tool steel surface layer, <i>Applied Surface Science</i>, 388, s. 174-179, 2016,</p> <p>7. Bonek M: Formation of hard composite layer on tool steel by laser alloying, <i>Archives of Metallurgy and Materials</i>, 61(2), 2016, s. 719-724,</p> <p>8. Śliwa A., Mikuła J., Gołombek K., Tański T., Bonek M., Kwaśny W., Brytan Z.: Prediction of the properties of PVD/CVD coatings with the use of FEM analysis, <i>Applied Surface Science</i>, 388, s. 281-287, 2016,</p>
<p>Research Projects*</p>	<p>As a coordinator and contractor, I was carrying out domestic projects in the following areas:</p> <ul style="list-style-type: none"> • Newly developed PVD coatings as an alternative for coatings obtained in processes burdensome for the natural environment (constitution process and degradation mechanisms), (contractor) • Metallic, ceramic and organic nanomaterials: synthesis - structure – properties – application, (contractor) • Investigations into the structure and properties of surface layers obtained as a result of High Power Diode Laser (HPDL) treatment of hot-work alloy tool steel, (general contractor) • CVD and PVD coatings improving the life of tools for high-speed dry cutting made of Al₂O₃ and Si₃N₄ ceramic materials, (contractor) • Design and manufacturing of functional gradient tool materials. Dependence of properties on technology and thickness of surface layers with a gradient of chemical and phase composition manufactured on tools for different applications, (contractor) • Improving the functional properties of elements of light casting magnesium and aluminium alloys heat treated by optimising their chemical composition and by laser remelting and/or alloying the surface with carbides and/or ceramic particles, (general contractor), • Examining the relationship between the structure and properties of new-generation sintered duplex steels produced with the hybrid methods by means of single-operation sintering with convection cooling and laser remelting and/or alloying of the surface, 2009 -2011(Contractor), • Forming the structure and properties of high-speed steels' surface layer by laser remelting and/or alloying the surface with the High Power Diode Laser (HPDL), 2010 -2012 (coordinator) • Investigation of characteristics of structure, mechanical properties and corrosion resistance of new generation of Lean duplex steels and their welded joints with MIG/MAG and TIG/A-TIG methods, 2012-2014, (contractor). <p>I participated or participate as a coordinator, key expert or contractor in the execution of projects financed from the European Union's funds:</p> <ul style="list-style-type: none"> • TEMPUS-PHARE (S-JEP-12089-97), European Union 1998-2002, "European Universities Integration EUINTEGGration Enforcement and Updating of Important New Technological and Educational Goals", (contractor), • Development programme, Operational Programme Innovative Economy for 2007-2013, Priority axis 1. Research and development of modern technologies, Action 1.1. Support of scientific research for establishment of a knowledge-based economy, Sub-measure 1.1.1. Research projects using the foresight method titled: Foresight of surface properties formation leading technologies of engineering materials and biomaterials FORSURF, 2009-2012, (key expert),

	<ul style="list-style-type: none"> • INFONANO project “Opening and development of an engineering and doctoral course in the field of nanotechnology and materials science INFONANO”, Operational Programme Human Capital, 2009-2012, (contractor), • Interactive education of engineer project - INTEREDU, Operational Programme Human Capital, 2010-2012, (coordinator), • Operational Programme Infrastructure and Environment, "The construction of the Scientific and Didactic Laboratory of Nanotechnology and Materials Technologies in Gliwice - LANAMATE” (13.1 OP IaE), (contractor), • Regional Operational Programme of Silesian Voivodeship Modernising and equipping the engineering materials testing and formation laboratories in Gliwice - MERMFLEG (8.1 RPO WSL), (contractor), • Universities Integration EUINTEGRation Enforcement and Updating of Important New Technological and Educational Goals, SOCRATES – ERASMUS, (LLP – the Lifelong Learning Programme), the European Union’s programme in education and vocational enhancement planned for 2007-2013, (contractor), • QUAPINFO Project - Improving the attractiveness and quality of education at the macro-department of Applied Computer Science with Computer Materials Science, Operational Programme Human Capital, 2011-2015 (contractor), • NANATRIM Project - Improving the attractiveness of education at the macro-department of Nanotechnology and Material Processes Technologies, Operational Programme Human Capital, 2011-2015 (contractor), • IMOTECH project – Improving the attractiveness of education at the department of Material Engineering, Operational Programme Human Capital, 2012-2015 (contractor), • PO WER project – Experienced graduate in the field of Materials Engineering - an answer to expectations of Industry 4.0, Operational Programme Human Capital, 2018-2020 (contractor - chairperson of recruitment committee), • ERASMUS +, (LLP – the Lifelong Learning Programme), the European Union’s programme in education and vocational enhancement planned for 2014-2020, (contractor). • Integration of advanced experiments, computation and data for Duplex Stainless Steel joining innovation, UE - Horizon 2020 - Marie Skłodowska-Curie Actions, Research and Innovation Staff Exchange (RISE), 2019-2022.
<p style="text-align: center;">Professional Membership</p>	<p>Since 2015 I have been a member of the Association of Computer Materials Science and Surface Engineering. In 2005-2010 I fulfilled the function of the Secretary General and Vice-President of this association. Since 2012 I have been a member of the Machine Science Council of the National Council of Ukraine for the Mechanics of Machines and Mechanisms (International Federation for the Promotion of Mechanism and Machine Science), Khmel'nitsky, Ukraine. Since 2016 I have been the Chairperson of the Circle of Materials Engineering of the Former Student's Association of the Faculty of Mechanical Engineering of the Silesian University of Technology, Poland. Since 2020, I have been a member of the Materials Engineering Discipline Council at the Silesian University of Technology, Poland</p>
<p style="text-align: center;">Potential Research Projects**</p>	<p>I am interested in participating in research projects on: materials engineering, tool materials, stainless steels, laser surface treatment, surface engineering</p>

* Please list achievements of recent 5 years

** This CV is intended to match Chinese and Polish Scientists within SPUC member universities, and Potential Research Projects is intended to apply for Sino-Polish or EU scientific cooperation projects.