Branimir Blagojevic, PhD

NASA Goddard Space Flight Center
8800 Greenbelt Road
Optics Branch, GSFC - 551
Greenbelt, MD 20771 United States
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09/2010 - Present
AST Optical Engineer
Duties, Accomplishments and Related Skills:
Apply Subject Matter Expert (SME) knowledge in physical science and aeronautics to lead highly technical projects for the Goddard Space Flight Center (GSFC). Past experience includes optical design, component and system fabrication, optical alignment, radiometric calibration, light source design and construction, characterization of the optical performance degradation due to the environmental effects and delivery of custom optical instruments and instrument subsystems for NASA GSFC, National Institute of Standards and Technology, Becton, Dickinson and Co., DoD/DHS, and the thermonuclear reactor projects at the Princeton Plasma Physics Laboratory for the Johns Hopkins University.

LEADERSHIP: Supervised up to 20 employees and monitor activities of additional support contractors. Schedule, assign and evaluate work, offering advice and mentorship to ensure project delivery. Member of Supervisor Workforce Advocacy Team from 2013 to 2015. Loaned Executive to 2016 Combined Federal Campaign of National Capital Area.

PROJECT MANAGEMENT: Manage projects with budgets of up to $4M and several research projects funded under $100K each. Provide expert advice on several programs with management experience, identifying areas for improvement and developing comprehensive recommendations. Apply effective project management methodologies, principles and best practices to plan, organize and execute complex, multifaceted projects and studies. Lead multiple teams of up to 8 people on projects such as the ICESat-2, PACE and XARM.

RESEARCH & ANALYSIS: Provide guidance on Light Detection and Radar (LIDAR) remote sensing systems, radiometric and optical instrument modeling, optical spectroscopy and plasma diagnostics. Conduct scientific studies, research and analysis to integrate advanced technologies and concepts into new instruments and systems.

TECHNICAL EXPERTISE: Advanced technical knowledge on LIDAR and other remote sensing instruments, radiometric modeling of the electro-optical systems and components. Provide technical concepts and planning as Principal Investigator and Co-Investigator for NASA Internal Research & Design projects and NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES). Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR) reviewer/COR with over 25 years of scientific and engineering experience in aerospace, defense and biomedical industries and academia. Expert knowledge of instrument design and operations, including sensor-based aerosol LIDAR systems for Astrobiology and bio-warfare, spectroscopy of thermonuclear devices and Dynamic Light Scattering. Serve as scientific authority on optical spectroscopy and spectral line broadening and shifting in laboratory and Astrophysical plasmas.

CUSTOMER SERVICE: Deal effectively with people at all levels on high-visibility projects supporting US government leaders. Translate customer requirements into action, using independent judgment to solve problems and meet assigned goals and objectives.

COMMUNICATIONS: Communicate effectively, orally and in writing, to upper-level management and senior officials, to define program objectives and provide project status updates. Develop and deliver oral briefings and detailed written reports on status, progress, issues and recommendations. Write, review and edit reports and briefings to clearly present analyses and findings with recommended solutions to assist executive decision making. Maintain communications with contractors to solve problems before they become critical.

ACCOMPLISHMENTS:
*Product Development Lead Deputy for PACE Ocean Color Instrument/Optics
*Product Development Lead for: XARM/RESOLVE/Filters; ICESat-2/ATLAS Telescope Alignment Monitoring System Light Source
*Lead for: PACE/Ocean Color Instrument Radiometry & Hyperspectral Bands (current); Laser Transmitter Optics and Optical Coatings Life Test of ICESat-2/ATLAS instrument
*Advised management on ICESat-2 Project/ATLAS findings to mitigate project risks, identifying excessive laser beam divergence in laser transmitter optics due

to molecular contamination (problem had been unknown for 12 years)
*Developed operational strategies to reduce ICESat-2 costs to mitigate molecular contamination without a major redesign
*Built the first NASA GSFC test facility for reliability testing of flight optics exposed to the laser-assisted molecular contamination levels of the space flight environment from concept to operational use
*Designed and qualified the ATLAS Telescope Alignment Monitoring System Light Source prototype vs. the ATLAS requirements
*Patented (pending) the first Astrobiology remote sensing instrument model for the detection and discrimination of bio-markers of extraterrestrial life in collaboration with the GSFC scientists.
*Supervisor Workforce Advocacy Team member, 2013-2015
*Exceeded the 2016 CFCNCA fundraising goal by 10% for portfolio of 12 Federal Agencies in Washington, DC, as NASA HQ/GSFC delegated Loaned Executive to CFCNCA

Becton, Dickinson and Company
7 Loveton Circle
Glencoe, MD 21152 United States

04/2010 - 09/2010
Chief Electro-Optical Engineer
Duties, Accomplishments and Related Skills:
Led highly complex technical development projects as Elector-Optical Engineer for clients. Left company with supervisor's approval to accept excellent job offer from NASA.

LEADERSHIP: Technical representative for new technology acquisitions and contract deliverables related to electro-optics-based medical instruments. Led team of five interdisciplinary Research & Development engineers to deliver new and improved fluorescence-based medical instruments used to diagnose infectious diseases. Provided QA/QC and reliability testing of electro-optical components for continuous run of the production line.

RESEARCH & ANALYSIS: Lead research and development projects to design and upgrade fluorescence-based medical instruments used to diagnose infectious diseases. Applied new concepts and technologies to improve instrument performance and reduce the cost without degradation of product reliability. Managed quality and reliability testing of the electro-optical components.

TECHNICAL EXPERTISE: Served as Technical Representative and SME for

new technology acquisitions and contract deliverables related to electro-optics medical instruments. Applied expertise in bio-fluorescence, optical spectroscopy and optical light sources, including Light Emitting Diode (LED) devices. Applied technical concepts based on new technologies to upgrade instrument performance and reduce production costs. Created instrument upgrade plans for the five most profitable instruments in this company's line of business, integrating advanced technologies into the medical instruments.

ACCOMPLISHMENTS:
*Redesigned sample bottle for BD Bactec-9000 from glass to plastic, saving millions of dollars

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General Resonance, LLC
1 Resonance Way
Havre de Grace, MD 21078 United States

08/2008 - 12/2009
Lead Scientist
Duties, Accomplishments and Related Skills:
Led highly complex technical development projects as Senior Scientist.

LEADERSHIP: Managed analytical laboratory with four personnel and a $200K budget, as well as product QC.

RESEARCH & ANALYSIS: Managed research and analysis to lead design, integration and testing of fluorescence-based optoelectronic sensors for detection and discrimination of biological agents. Electrochemically produced ingestible/intravenous administrable metallic nanoparticle solutions for treatment of infectious and autoimmune system diseases, using silver and zinc for bacterial, viral and fungal infections and gold as a disease-modifying drug.

TECHNICAL EXPERTISE: Directed modeling design of optical properties of metallic nanoparticle solutions and characterization of particle size distribution by Dynamic Light Scattering to establish product Quality Control that met Food and Drug Administration (FDA) requirements. Applied advanced technical knowledge of electro-optical instruments, photon-counting detectors, bio-fluorescence, optical spectroscopy of gas discharges, and optical light sources.

ACCOMPLISHMENTS:
*Used advanced electro-optical technologies to meet/exceed FDA-regulated product requirements

*Developed product QC for ingestible/intravenous administrable metallic nanoparticle solutions

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Science and Engineering Services, Inc.
6992 Columbia Gateway Drive
Columbia, MD 21046 United States

08/2004 - 08/2008
Senior Instrument Scientist
Duties, Accomplishments and Related Skills:
Served as Lead Research, Design and Test Engineer for remote sensing systems, conducting research on highly classified topics.

LEADERSHIP: Competed for and won $6.1M government contract to design and build LIDAR-Controlled Airspace Sensor (LCAS) and Ultraviolet Bio-Trigger Lidar (UBTL) digital fluorescence systems operating in solar blind fluorescence spectral range to sense and identify aerosol Bio-Warfare Agents (BWA) for Homeland Security Advanced Research Projects Agency (HSARPA) and Defense Advanced Research Projects Agency (DARPA). LCAS is an eye safe LIDAR capable to discriminate BWA in daylight optical background conditions.

PROJECT MANAGEMENT: Led or co-led product development teams of six to seven people on multiple projects.

RESEARCH & ANALYSIS: Developed and evaluated algorithms for target detection and discrimination using the fluorescence LIDAR signal data. Performed radiative transfer calculations with MODTRAN and HITRAN. Developed a data QC algorithm for the fluorescence LIDAR signal data. Demonstrated new remote sensing technology of daylight operation of fluorescence LIDAR for transfer to Department of Defense (DOD) Joint Biological Standoff Detection System (JBSDS) LIDAR at Dugway Proving Grounds, UT, and Edgewood Chemical Biological Center, Aberdeen, MD. Developed and published original analytical model of the Receiver Operating Characteristic (ROC) curve for digital fluorescence LIDAR. Developed and evaluated algorithms for target detection and discrimination using the fluorescence LIDAR signal data. Performed radiative transfer calculations with MODTRAN and HITRAN. Developed data quality control algorithms for the fluorescence LIDAR signal data.

TECHNICAL EXPERTISE: Used the LIDAR prototype system to detect and discriminate submerged oil spills at sea for the US Coast Guard. Modeled IR LIDAR system for detection of exhaled Ethanol vapors at 3.4 um for National

Institutes of Health by using pulse operated Interband Cascade laser FP-ICL from Maxion Technologies, Inc. Expert knowledge of DOD sensor-based LIDAR systems for the bio-warfare.

ACCOMPLISHMENTS:
*Developed and published the first-ever analytical model of the Receiver Operating Characteristic (ROC) curve for digital fluorescence LIDAR
*Designed and built digital fluorescence LIDAR systems (LCAS and UBTL) operating in solar blind fluorescence spectral range for sensing and discrimination of aerosol BWA (LCAS is an eye safe LIDAR capable of discriminating BWA in daylight optical background conditions).
*Developed and published original analytical model of the ROC curve for digital fluorescence LIDAR
*Used LIDAR system to detect and discriminate submerged oil spills at sea for the US Coast Guard

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National Institute of Standards and technology
100 Bureau Drive
Gaithersburg, MD 20899 United States

01/2003 - 08/2004
Instrument Scientist
Duties, Accomplishments and Related Skills:
RESEARCH & ANALYSIS:
Researched the optical spectra of highly charged Xenon ions produced in NIST Electron Beam Ion Trap to improve efficiency of the pulsed plasma light sources for semiconductor nanolithography. Research funded by Intel.

TECHNICAL EXPERTISE:
Applied advanced technical knowledge of the spectroscopy instrumentation, photon counting detectors, spectral light sources, atomic spectroscopy and plasma diagnostics.

ACCOMPLISHMENTS:
*Designed, built and delivered the Ultra High Vacuum (UHV) Grazing Incidence Extreme Ultraviolet (EUV) spectrometer with the focusing optics and the Liquid Nitrogen cooled back-illuminated CCD detector for the Electron Beam Ion Trap Facility (EBIT) at NIST. This EUV beamline has been permanently installed and continuously operated by NIST EBIT staff since 2003.
*Designed and built UHV Normal Incidence Ultraviolet spectrometer with piezo-motor controlled diffractive grating stage. Grating rotation-translation functions

are calculated using a hybrid analytical-ray-tracing method for 50 nm - 300 nm spectral range.

Johns Hopkins University
Department of Physics and Astronomy
3400 N. Charles Street
Baltimore, MD 21218 United States

04/2001 - 03/2003
Postdoctoral position
Duties, Accomplishments and Related Skills:
RESEARCH & ANALYSIS:
Researched the spatial electron temperatures of ohmically, RF and neutral beam heated plasma of the National Spherical Torus Experiment (NSTX), a thermonuclear reactor at the Princeton Plasma Physics Laboratory (PPPL), NJ.

TECHNICAL EXPERTISE:
Applied advanced technical knowledge of the plasma spectroscopy instrumentation, photon counting detectors, ion spectroscopy and the thermonuclear plasma diagnostics.

ACCOMPLISHMENTS:
*Designed, built and installed the Imaging Transmission Grating Spectrometer (ITGS) on NSTX reactor.
*Supported JHU plasma diagnostics instrument package at PPPL, NJ.

GREMI, University of Orleans
14 rue d'Issoudun
Orleans, B.P. 6744, Loire, France

02/2000 - 02/2001
Postdoctoral position
Duties, Accomplishments and Related Skills:
RESEARCH & ANALYSIS:
Researched EUV spectra of the pulsed plasma light sources for semiconductor nanolithography.

TECHNICAL EXPERTISE:
Applied advanced technical knowledge of the plasma spectroscopy instrumentation, photon counting detectors, ion spectroscopy and pulsed plasma light sources.

ACCOMPLISHMENTS:
*Created and optimized Industrial Pulsed Plasma Light Source for semiconductor nanolithography for French National PREUVE project. The prototype radiated 20-40 Watts at 13.5 nm at 1 kHz discharge pulse rate. It was second most powerful Pulsed Plasma Light Source in 2000.

Institute of Physics
Pregrevica 118
Zemun,Serbia

10/1991 - 02/2000
Research Assistant Professor
Duties, Accomplishments and Related Skills:
RESEARCH & ANALYSIS:
Researched broadening and shifting of analogous ionic spectral lines in plasma along the isoelectronic sequences of laboratory and astrophysical interest. Testing of LS (spin-orbital) coupling for atomic energy levels of light elements (used results to enhance Stark broadening theories and to perform quantum mechanical calculations). Research papers are available through the NIST Atomic Spectral Line Broadening Bibliographic Database.

TECHNICAL EXPERTISE:
Applied advanced technical knowledge of the plasma spectroscopy instrumentation and plasma diagnostics, photon counting detectors, ion spectroscopy and pulsed plasma light sources.

ACCOMPLISHMENTS:
*Designed and coded software for theoretical - quantum mechanical modeling, data acquisition, and data processing.
*Built and managed a high-resolution optical spectroscopy laboratory for plasma diagnostics.
*Improved the spectroscopic methods of plasma diagnostics.
*Produced reliable and precise measurements of electron concentration and electron temperature in laboratory plasmas.

Education:

University of Belgrade, Belgrade, Serbia Belgrade Serbia
Doctorate 07/1999
Major: Physics
Doctoral Thesis: “Broadening and Shifting of Analogous Ion Spectral Lines in Plasma Isoelectronic Sequences.” Thesis results were published in the Scientific Journals.

University of Belgrade, Belgrade, Serbia Belgrade Serbia
Master's Degree 06/1995
GPA: 4.00 of a maximum 4.00
Major: Physics **Honors:** Summa Cum Laude
Master's Thesis: "Temperature Dependence of Width and Shift of Spectral Lines along Boron Isoelectronic Sequence." Thesis results were published in the Scientific Journals.

University of Belgrade, Belgrade, Serbia Belgrade Serbia
Bachelor's Degree 06/1991
GPA: 3.93 of a maximum 4.00
Credits Earned: 128 Semester hours
Major: Physics

Affiliations:

American Physical Society - Member
Sigma XI, The Scientific Research Society, NIST Chapter - Member

AWARDS:

*NASA Center Innovation Fund Award, 2015/16
*French EGIDE Researchers Fellowship, 2000 to 2001
*Best Master's Thesis in Physics, University of Belgrade, Serbia, 1995
*Best Graduate Work in Physics, University of Belgrade, Serbia, 1991