



C.V.

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Associate Professor

Department of Laser Physics and Technology
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Key Qualifications

1997 BSc Biomedical Engineering Dept. of Biomedical Engineering, Faculty of Electrical and Mechanical Engineering, Damascus University, Damascus, Syria.

2005 PhD Biocybernetics and Biomedical Engineering, Dept. of Precision and Biomedical Engineering, Faculty of Mechatronics, Warsaw University of Technology, Warsaw, Poland. (English program).

Professional Experience

2015- 2019 Head of Department of Laser Physics and Technology, Higher Institute for Laser Research and Applications, Damascus University.

18-4-2018- current Associate Professor at Higher Institute for Laser Research and Applications, Damascus University.

2013-2018 Assistant Professor at Higher Institute for Laser Research and Applications, Damascus University.

2011-2013 Faculty member at Higher Institute for Laser Research and Applications, Damascus University.

Research Interests

Noninvasive Optical methods in medicine

Publications

1. Shurrab, K., Kochaji, N., **Bachir, W.** "Diffuse reflectance spectroscopy for identification of carcinogen transformation stages in skin tissue", Polish Journal of Medical Physics and Engineering, 25(3), pp. 141-147, 2019.
2. Shurrab, K., Kochaji, N., **Bachir, W.** 'The progression of skin cancer by using Carcinogen in the Hamster During laser irradiation', *Iranian Journal of Medical Physics*, VOL. 16, issue 4, pp. 314-318, 2019, doi: 10.22038/ijmp.2018.30727.1354.
3. Shahin, A., Sayem El-Daher, M., **Bachir, W.**," Determination of the optical properties of Intralipid 20% over a broadband spectrum", *Photonics Letters of Poland*. VOL. 10 (4), 124-126, 2018, doi: 10.4302/plp.v10i4.843
4. Shahin, A., **Bachir, W.** "Broadband spectroscopy for characterization of tissue-like phantom optical properties", Polish Journal of Medical Physics and Engineering, 23(4), pp. 121-126, 2017.
5. Shurrab K , Kochaji N, **Bachir W**, " Development of Temperature Distribution and Light Propagation Model in Biological Tissue Irradiated by 980 nm Laser Diode and Using COMSOL Simulation", *J Lasers Med Sci* 2017 Summer;8(3).
6. Toumi J, Saiof F, and **Bachir W** , " Algorithm for Analyzing Thermal Images of Laser Irradiated Human Skin ", *J Lasers Med Sci*. 2016 Summer; 7(3): 163–166.
7. Toumi J, Saiof F, **Bachir W** , "Evaluation of thermal effects during vascular lesions treatment by dye laser ", *International Journal of ChemTech Research* Vol.8, No.12 pp 610-615, 2015.
8. Hamadah O, **Bachir W**, Zamzam M K, "Thermal Effect of Er:YAG Laser Pulse Durations on Teeth During Ceramic Bracket Debonding" *Journal of Dental and Medical Problems.*, 53,3, 2016.
9. **Hafez R**, Hamadah O, **Bachir W** " Mapping of healthy oral mucosal tissue using diffused reflectance spectroscopy: ratiometric-based total hemoglobin comparative study " *Lasers Med Sci*. Nov;30(8):2135-41. 2015.
10. Mohammad Khare Zamzam, **Wesam Bachir**, Imad Asaad, " Towards Optimum Er:YAG Laser Parameters for Orthodontic Composite Removal ", *Dent. Med. Probl.*, 51, 3, 359–364 , 2014.
11. Czyzewska M., **Bachir W.**, Dunajski Z., "Extraction of Fetal MCG", *EleKtronika*, Nr 8-9, pp. 140-142, Warsaw, Poland, 2004.
12. **Bachir W.**, Grot P., Dunajski Z., "System for Fetal Magnetocardiography in an Unshielded Environment", *EleKtronika*, Nr 8-9, pp. 147-149, Warsaw, Poland, 2004.
13. **Bachir W.**, Dunajski Z., "Baseline optimization of balanced third order flux transformer for fetal magnetocardiography", *Proceedings of the XII Konferencja Naukowa Biocybernetyki i Inżynierii Biomedycznej*, Vol. I, 28-30, November, Warsaw. 2001.
14. **Bachir W.**, Dunajski Z., "Biomagnetometers for fetal magnetocardiography in an unshielded environment", *Proceedings of International Conference Mechatronics 2000*, Vol. I, pp. 210-213, Warsaw, Sept. 21-23, 2000.

15. **Bachir W.**, Grot P., Dunajski Z., “A Single-channel SQUID magnetometer for measuring magnetic field of human fetal heart”. Photonics Applications in Astronomy, Communications, Industry and high-Energy Physics Experiments II edited by Ryszard S. Romaniuk, Proceedings of the SPIE, Volume 5484, pp. 432-436, 2004.
16. **Bachir W.**, Dunajski Z., “Improving Signal-to-Noise Ratio of Fetal Magnetocardiograph by Third Order Flux Transformer”. Photonics Applications in Astronomy, Communications, Industry and high-Energy Physics Experiments II -edited by Ryszard S. Romaniuk et. al, Proceedings of the SPIE, Volume 5125 pp. 388-391, 2003.
17. **Bachir W.**, Dunajski Z., “Movable magnetometer for fetal heart monitoring”, 10th Mediterranean Conference on Medical and Biological Engineering, MEDICON and HEALTH TELEMATICS 2004, Ischia, Italy 31 July - 5 August, 2004.
18. **Bachir W.**, Dunajski Z., Grot P., Palko T., “Gradiometer for fetal heart monitoring in hospital setting”, 14th International Conference on Biomagnetism, BIOMAG 2004, Boston, USA, 8-12 August, 2004.
19. **Bachir W.**, Dunajski Z., Palko T., “SQUID system with third order gradiometer for fetal heart monitoring”, Proc. of WC2003 World Congress on Medical Phys. and Biomed. Eng., Sydney, Australia, 2003.

Teaching Experience

Undergraduate courses

Signal Processing: Faculty of Communications and Information Technology, Yarmouk Private University.

Physics: Faculty of Communications and Information Technology, Yarmouk Private University.

Medical Physics: Faculty of Dentistry, Damascus University.

Physics: Faculty of Information Technology, Damascus University.

Medical Physics: Faculty of Dentistry, Al-sham Private University, Damascus.

Biophotonics: Faculty of Science, Damascus University

Light Matter Interaction: Faculty of Science, Damascus University

Scientific Research: Faculty of Science, Damascus University

Postgraduate courses

Biophysics: Faculty of Dentistry, Damascus University.

Medical Physics: Faculty of Science, Damascus University.

Laser Tissue Interaction: Higher Institute for Laser Research and Applications, Damascus University.

Laser Applications in Medicine and Biology: Higher Institute for Laser Research and Applications, Damascus University.

Laser Medical Techniques and Devices: Higher Institute for Laser Research and Applications, Damascus University.

Research Mentoring

Graduate Student	Degree sought	Title	Status
Nermen Hammoud	MS, LSA*	FDTD modelling of photonic scattering from oral epithelial cells	completed 2017

Ali Shaheen	MS, LSA	Fluorescence spectroscopy of PPIX based epithelial tumor like optical phantoms	completed 2017
Haneen Shahadeh	MS, LSA	Design study of fiber optic probes for laser induced fluorescence measurements in turbid media	completed 2017
Mariam Mariam	MS, LSA	Measurement of optical properties during photodynamic therapy	ongoing
Yamamah hosh	MS, LSA	Single source laser photo-plethysmography	ongoing
Ali Shaheen	PhD, LSA	Optical Characterization of brain tissue like optical phantoms and its applications in medical physics	ongoing
Kawther Shurab	PhD, LSD	Impact of laser thermotherapy feed backed by optical spectroscopy on squamous cell carcinoma malignant transformation of epithelium	ongoing
Fatima Ismail	PhD, LSD	Development of optoelectronic system for photodynamic therapy	ongoing
Farah Abu Dargham	MS, LSA	An optical imaging system for visualizing superficial veins by near infrared laser	ongoing
Noor Al ayneah	MS, LSA	Monitoring of biological respiration activities by laser vibrometer	ongoing
Kawther Al ghorani	MS, LSA	Design of optical system for imaging surgical margins	ongoing
Haniah Al tabaa	MS, LSA	Assembling and calibrating optical tweezers for use in physics and biophysics	ongoing
Joney Toumi	PhD, LSA	Evaluation of laser irradiated skin tissue by optical methods	completed 2018

*Laser science and applications

Conferences

- Mechatronics 2000 international conference, 21-23 September 2000, Warsaw, Poland
- SYMBIOSYS 2001, 11-13 September 2001, Scztyrk, Poland.
- Twelve International conference on Biocybernetics and Biomedical Engineering, 28-30 November, 2001, Warsaw, Poland.
- Thirteenth International conference on Biomagnetism, BIOMAG 2002, 10-14 Aug. 2002, Jena, Germany.
- Mechatronics 2000 international conference, 21-23 September 2000, Warsaw, Poland
- 2003, Sydney, Australia.
- Fourteenth International conference on Biomagnetism, BIOMAG 2004, 8-12 Aug. 2004, Boston, USA.
- Mechatronics 2004 international conference, 23-25, September 2004, Warsaw, Poland

Languages

Arabic (native)

English (very good), holder of CPE certificate

Polish, (fair)

Personal details

Date of birth: 01 July 1975

Marital status: married

Children: 3

References: available upon request.