Curriculum Vitae

Md. Wahadoszamen (PhD)

Present Positions

Professor, Department of Physics, University of Dhaka, Bangladesh.

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Researcher and the Member of Co-ordination Committee, Nonlinear Optics and Laser Spectroscopy Laboratory, Center for Advanced Research in Sciences, University of Dhaka, Bangladesh.

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Gust Researcher, Section of Biophysics, Department of Physics and Astronomy, Faculty of Science, VU University Amsterdam, The Netherlands.

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Education

a. BSc in Physics, April 1999, University of Dhaka, Bangladesh.
b. MSc in Physics, December 2000, University of Dhaka, Bangladesh.
c. PhD in Material Science, March 2006, Hokkaido University, Japan.

Employments

(a) Kwansei Gakuin University, Sanda-Kobe, Hyogo, Japan, from September 20, 2019 to January 19, 2020, Visiting Professor at the School of Science and Technology.
(b) University of Dhaka, Bangladesh, from May 25, 2016, Professor in the Department of Physics.
(c) Carnegie Mellon University, USA, from June – July 2016, Short Term Visiting Scholar in the Department of Chemistry.
(d) VU University Amsterdam, the Netherlands, from January 2012 to date, Guest Researcher in the Department of Biophysics.
(e) University of Dhaka, Bangladesh, from July 2013 to May 24, 2016, Associate Professor in the Department of Physics.
(f) University of Dhaka, Bangladesh, from December 2007 to July 2013, Assistant Professor in the Department of Physics.
(g) VU University Amsterdam, the Netherlands, from December 2009 to December 2011, Postdoctoral Scientist in the Department of Biophysics.
(h) University of Dhaka, Bangladesh, from December, 2006 to November, 2007, Lecturer in the Department of Physics.
(i) University of Tsukuba, Japan, from April, 2006 to December, 2006, Assistant Professor in the Department of Chemistry.
(g) BRAC University, Dhaka, Bangladesh, from October, 2001 to September, 2002, Teaching Assistant & Lecturer in the Department of Mathematics and Natural Sciences.

Major Areas of Research

1. Laser and Optical Physics:

Laser Induced Breakdown Spectroscopy
Laser Raman Spectroscopy
Surface Enhanced Raman Spectroscopy (SERS)
Laser based Fabrication of Nanomaterials and their Characterizations

The focus of the research is, by exploiting the high purity of laser beam and ultra-high pulse power, to study the molecular interactions, chemical composition, elemental concentration, phase and polymorphy of elements presents in different specimen (be it biological, chemical or polymorph), to fabricates nano-clusters from different noble materials (such as gold, silver, and aluminum and their alloys), and investigate their morphology and dynamics. Two custom-built state-of-art experimental techniques- Laser Induced Breakdown Spectroscopy (LIBS) and Laser Raman Spectroscopy-are being used. The LIBS experimental set-up has a gated and intensified CCD (ICCD) camera as the optical detector, which renders instrument to detect a trace element down to ppm level and thus making it a good choice for pollution monitoring and geological exploration in Bangladesh. Recently, we could construct an optimized Laser Raman system using the same ICCD optical detector and develop a reliable Surface Enhanced Raman Spectroscopy (SERS) protocols. The newly constructed SERS system would mark as a new dimension in the experimental research in Bangladesh, which would open up multitude of possibilities to carry state-of-art research in the days to come.

2. Biophysics of Photosynthesis / Physics of Energy:

Stark Spectroscopy and Advanced Laser Spectroscopy (Single Molecule Spectroscopy and Transient Absorption Spectroscopy and Time-Resolved Fluorescence Spectroscopy) on natural, engineered photosynthetic pigment-protein complexes and their artificial analogs for precisely uncovering their biophysical molecular mechanisms and electronic structures associated with their Light-Harvesting and Regulative Energy Dissipation functions.

Natural photosynthesis has been a huge source of inspiration over many years for designing bio-inspired artificial devices for solar energy conversion and storage. To this end, achieving precise control on pigment organization and pigment-pigment/pigment-protein interactions are the primary challenge in the design of artificial analogs of light-harvesting pigment-protein complexes. In such line of thinking, precise mapping of the electronic structures and understanding of the strength and nature of Charge Transfer (CT) states of the mentioned natural, engineered photosynthetic antennas and their artificial analogs may be a good source of inspiration for designing and developing more complex and efficient next generation natural /artificial solar energy conversion systems. Creation of artificial photosynthetic systems could meet the ever-increasing demand for cheap, environmentally clean energy for the generation to come.

The mentioned researches are being performed in collaboration with different renowned and leading research groups around the globe (the Netherlands, Germany, England, Czech Republic, USA, Israel and Japan).

3. Spectroscopic Investigation of Organic Light Emitting Diodes:

Stark Spectroscopy and other spectroscopic techniques to investigate the properties of some **Organic Conjugated Polymers** important for making light emitting diodes.

Collaborator: Dr. Linda A Peteanu, Carnegie Mellon University, Pittsburgh, Pennsylvania, USA.

4. Spectroscopic Investigations of Natural and Reconstituted Carotenoid Analogs:

Stark Spectroscopy and other spectroscopic techniques to investigate the electronic structures and excite stated dynamics of a variety of **Natural Carotenoids** and their **different Isomers** to be used in Engineered and Artificial Photosynthetic pigment-protein analogs for harnessing better conversion efficiency.

Collaborator: Dr. Hideki Hashimoto, Kwansei Gakuin University, Sanda, Kobe, Japan.

Publications

(29) Md.Wahadoszamen, Tjaart P.J.Krüge, Anjue ManeAra, Rienk van Grondelle, Michal Gwizdala
"Charge transfer states in phycobilisomes"
Biochemica et Biophysica Acta (BBA) – Bioenergetics (in press).

(28) A. F. M. Y. Haider, Marjina Pervin, Zulfiqar H. Khan, and M. Wahadoszamen
"Sub-ppm level detection of lead in aqueous solution using laser induced breakdown spectroscopy coupled with adsorption technique"

Journal of Applied Spectroscopy (accepted for publication).

(27) Fariha Tasneem, Zulfiqar Hasan Khan, Ahatashamul Islam, Nuzhat Faiza, S. M. Mainul Kabir, Aminul Islam Talukder, A. F. M. Yusuf Haider, and Md. Wahadoszamen*
"A rapid method of identification of garnet in beach sands using Laser Induced Breakdown Spectroscopy"
Journal of Bangladesh Academy of Sciences, Vol. 43, No. 2, 149-157, 2019.

(26) Anjue Mane Ara, Md. Shakil Bin Kashem, Rienk van Grondelle, and Md. Wahadoszamen*
"Stark fluorescence spectroscopy on peridinin chlorophyll protein complex of dinoflagellate, *Amphidinium carterae*"

Photosynthesis Research (Springer Nature) 143, 233-239, 2020.

(25) Christian M. Legaspi, Regan E. Stubbs, Md. Wahadoszamen, David J. Yaron, Linda A. Peteanu, Abraham Kemboi, Eric Fossum, Yongli Lu, Qi Zheng, and Lewis J. Rothberg
"Rigidity and Polarity Effects on the Electronic Properties of Two Deep Blue Delayed Fluorescence Emitters"
The Journal of Physical Chemistry C, 122, 11961−11972 (2018)

(24) Michal Gwizdala,* Tjaart P. J. Krüger, Md. Wahadoszamen, J. Michael Gruber, and Rienk van Grondelle.
"Phycocyanin: One Complex, Two States, Two Functions"
The Journal of Physical Chemistry Letters 9, 1365-1371 (2018).

(23) Md. Wahadoszamen*, Erica Belgio, Md. Ashiqur Rahman, Anjue Mane Ara, Alexander V. Ruban, Rienk van Grondelle.
"Identification and Characterization of Multiple Emissive Species in Aggregated Minor Antenna Complexes"
Biochemica et Biophysica Acta (BBA) – Bioenergetics 1857, 1917-1924 (2016).

(22) Vladimir I. Novoderezhkin, Roberta Croce, Md. Wahadoszamen, Iryna Polukhina, Elisabet Romero, and Rienk van Grondelle.
"Mixing of exciton and charge-transfer states in light-harvesting complex Lhca4"
Physical Chemistry Chemical Physics 18, 19368--19377 (2016).

(21) Md. Wahadoszamen*, Sandrine D'Haene, Anjue Mane Ara, Elisabet Romero, Jan P. Dekker, Rienk van Grondelle, and Rudi Berera*.
"Identification of Common Motifs in the Regulation of Light Harvesting: the case of Cyanobacteria IsiA"
Biochemica et Biophysica Acta (BBA) – Bioenergetics 1847, 486-492 (2015).

(20) Md. Wahadoszamen*, Arifur Rahaman*, Nabil Md. Rakinul Hoque, Aminul I Talukder, Kazi Monowar Abedin and A. F. M. Yusuf Haider.
"Laser Raman spectroscopy with different excitation sources and extension to Surface Enhanced Raman Spectroscopy"
Journal of Spectroscopy http://dx.doi.org/10.1155/2015/895317.

(19) Md. Wahadoszamen, Iris Margalit, Anjue Mane Ara, Rienk van Grondelle, and Dror Noy.
"The role of charge-transfer states in energy transfer and dissipation within natural and artificial bacteriochlorophyll-proteins"
Nature Communications (2014) DOI: 10.1038/ncomms6287.

(18) Md. Wahadoszamen* Artur Ghazaryan, Hande E. Cingil, Anjue Mane Ara, Claudia Büchel, Rienk van Grondelle, and Rudi Berera*
"Stark fluorescence spectroscopy reveals two emitting sites in the dissipative state of FCP antenna"

Biochemica et Biophysica Acta (BBA) – Bioenergetics 1837, 193-200 (2014).

(17) Md. Wahadoszamen* Rudi Berera, Anjue Mane Ara, Elisabet Romero and Rienk van Grondelle*
"Identification of two emitting sites in the dissipative state of the major light harvesting antenna"
Physical Chemistry Chemical Physics 14, 759–766 (2012).

(16) A. I. Talukder, P. Sultana, AFMY Haider, M. Wahadoszamen, KM Abedin and SFU Farhad.
"Power dependence of size of laser ablated colloidal silver nanoparticles"
European Physical Journal D 60, 295-300 (2010).

(15) M. E. Sadat, A.F.M.Y Haider, K. M. Abedin, M. Wahadoszamen, A. I. Talukder.
"Semiquantitative determination of chromium content of river bed soil of Buriganga River at different locations"
Journal of the Bangladesh Academy of Sciences 34, 123-131 (2010).

(14) A.F.M.Y Haider, M. Wahadoszamen, M. E. Sadat, K. M. Abedin, A. I. Talukder.
"Elemental profiling and determination of Ti content of the beach sand samples of Bangladesh using LIBS technique"
Optics & Laser Technology 42, 969-974 (2010).

(13) M. F. Ahmed, K. M. Abedin, M. E. Sadat, A. I. Talukder, M. Wahadoszamen and A.F.M.Y Haider."Elemental Profiling of Surface Water around Dhaka City by Laser Induced Breakdown Spectroscopy"
Journal of the Bangladesh Academy of Sciences 33, 209-218 (2009).

(12) Md. Wahadoszamen, Takashi Yamamura, Atsuya Momotake, Yoshinobu Nishimura, and Tatsuo Arai.
"High Binding Affinity of DABCO with Porphyrin in a Porphyrin-cis-Stilbene-Porphyrin Triad"
Heterocycles, 79, 331-337 (2009).

(11) Takamitsu Fukuda, Satoshi Masuda, Md. Wahadoszamen, Nobuhiro Ohta and Nagao Kobayashi.
"Electroabsorption Spectra of Directly Linked Tribenzotetraazachlorin-Fullerene Conjugates Having Either Electron Donating or Withdrawing Substituents in a Polymer Film"
Dalton Transactions, Number 31, 6089–6091 (2009).

(10) Kazi M. Abedin, M. Ahasan Habib, M. Wahadoszamen, Aminul I. Talukder, and A. F. M. Y. Haider.
"Construction of Laser Raman System using diode lasers and its performance"
Journal of the Bangladesh Academy of Sciences, 33, 55-62 (2009).

(9) Md. Wahadoszamen, Tatsuo Hamada, Toshifumi Iimori, Takakazu Nakabayashi, and Nobuhiro Ohta,
"External Electric Field Effects on the Absorption, Fluorescence, and Phosphorescence Spectra of Diphenylpolyynes in a PMMA Film"
Journal of Physical Chemistry, A, 111, 9544-9552 (2007).

(8) Yousuke Miura, Atsuya Momotake, Yoshihiro Shinohara, Md. Wahadoszamen, Yoshinobu Nishimura, and Tatsuo Arai.
""The first observation of the effect of dendritic structure to produce the triplet excited state of the core stilbene by dendron excitation"
Tetrahedron Letters, 48, 639-641 (2007).

(7) Junpei Hayakawa, Masashi Ikegami, Takuo Mizutani, Md. Wahadoszamen, Atsuya Momotake, Yoshinobu Nishimura, and Tatsuo Arai.
"Solvent Effect on the Photochemical Properties of Symmetrically Substituted Trans-3,3',5,5'-Tetramethoxystilbene"
Journal of Physical Chemistry, A. 110, 12566-12571 (2006).

(6) Md. Wahadoszamen, Takakazu Nakabayashi, Soonchul Kang, Hiroshi Imahori and Nobuhiro Ohta. "External Electric Field Effects on Absorption and Fluorescence Spectra of a Fullerene Derivative and Its Mixture with Zinc-Tetraphenylporphyrin Doped in a PMMA Film"
Journal of Physical Chemistry, B. 110, 20354-20361 (2006).
(5) Md. Wahadoszamen, Takakazu Nakabayashi, and Nobuhiro Ohta.
"External Electric Field Effects on Emission of a Mixture of Tetraphenylporphyrin and Fullerene in a Polymer Film"
Journal of the Chinese Chemical Society, 53, 85-92 (2006).

(4) Md. Wahadoszamen, Takakazu Nakabayashi, and Nobuhiro Ohta.
"Electroabsorption Spectra of a Complex Formed between Tetraphenyl–porphyrin and Fullerene in a Polymer Film"
Journal of Photochemistry and Photobiology A: Chemistry, 178, 177-184 (2006).

(3) Takakazu Nakabayashi, Md. Wahadoszamen and Nobuhiro Ohta.
"External Electric Field Effects on State Energy and Photoexcitation Dynamics of Diphenylpolyenes"
Journal of the American Chemical Society, 127, 7041-7052 (2005).

(2) Md. Wahadoszamen, Takakazu Nakabayashi, and Nobuhiro Ohta.
"Electric Field Effects on Photoisomerization Process of Diphenylpolyenes Doped in a Polymer Film as Revealed by a Field-Induced Change in Fluorescence Spectrum"
Chemical Physics Letters, 387, 124-129 (2004).

(1) K. M. Abedin, M. Wahadoszamen and A. F. M. Y. Haider.
"Measurement of In–Plane Motions and Rotations using a Simple Electronic Speckle Pattern Interferometer"
Optics & Laser Technology, 34, 293-298 (2002).

Awarded Grant

1.Visitorship Grant for one year awarded from the Netherlands Organization for Scientific Research (NWO) (Dossiernr: 040.11.115, Correspondentienr: 2009/05789/BOO).
2. Visitorship Grant for four months awarded from the Netherlands Organization for Scientific Research (NWO) (Dossiernr: 040.LL.678 / 7039, Correspondentienr: 2018/ScW / 00522964).

Courses have/being taught:

a. Quantum Mechanics for MS students at Kwansei Gakuin University, Japan.
b. Biophysics for BS students at Kwansei Gakuin University, Japan.
c. Quantum Mechanics for third grade undergraduate student (being taught now).
d. Advanced Laser Physics (I am teaching this course over last six consecutive years for MS students in the University of Dhaka, Bangladesh)
e. Waves and Optics (I taught this course for three years for 2nd Year Honors Level students of the Department of Physics, University of Dhaka, Bangladesh).
f. Basic Science in English (for 2nd grade undergraduate students at the University of Tsukuba, Japan)

Research Collaborators

1. **Dr. Rienk van Grondelle**, VU University Amsterdam, the Netherlands.

2. **Dr. Jan P. Dekker**, VU University Amsterdam, the Netherlands.
3. **Dr. Roberta Croce**, VU University Amsterdam, the Netherlands.
4. **Dr. Rudi Berara**, Osaka City University, Japan.
5. **Dr. Dror Noy**, Migal-Galilee Research Institute, Israel.
6. **Dr. Claudia Büchel**, Gothe University of Frankfurt, Germany.
7. **Dr. Vladimir Novoderezhkin**, Moscow State University, Russia.
8. **Dr. Alexander V. Ruban**, Queen Mary University of London, United Kingdom.
9. **Dr. Linda A Peteanu**, Carnegie Mellon University, USA.
10. **Dr. Hideki Hashimoto,** Kwansei Gakuin University, Japan.
11. **Dr. Tjaart P. J. Kruger**, University of Pretoria, South Africa.
12. **Michal Gwizdala**, University of Pretoria, South Africa.
13. **Jakub Pšenčík**, Charles University,Czech Republic.
14. **Dr. Charusheela Ramanan**, Project Leader, Max Planck Institute for Polymer Research, Mainz, Germany.

Extra Curricular Activities

a. Student Advisor in the Department of Physics (from November 2015 to November 2018), University of Dhaka, Bangladesh.
b. Treasurer, for two consecutive years, of Bangladesh Society Sapporo (BSS) (a nonprofit voluntary organization of Bangladeshi students staying in Sapporo, Japan.)
c. Chief Adviser of SUS, a voluntary organization (comprising of both professionals and students) founded with an objective to promote the education rate and social awareness for the poor and deprived rural peoples especially women residing in the remote areas of Bogra, Bangladesh.

Name of the Referees

1. Dr. Rienk van Grondelle
Professor, Department of Biophysics, Faculty of Science, VU University Amsterdam, the Netherlands. r.van.grondelle@vu.nl
2. Dr. A. F. M. Yusuf Haider, Professor, Department of Mathematics and Natural Sciences, University of Dhaka, Bangladesh. yuhaider@gmail.com
3. Dr. Linda A Peteanu, Professor, Department of Chemistry, Carnegie Mellon University, Pittsburgh, PA 15213, USA. peteanu@andrew.cmu.edu

Sincerely Yours
Md. Wahadoszamen (PhD)