

# CURRICULAM VITAE

## **Dr. Mohammad Junaebur Rashid**

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### **Associate Professor**

Department of Electrical and Electronic Engineering,  
Faculty of Engineering and Technology,  
University of Dhaka, Bangladesh.

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**Phone:** +8801911701485

### **PROFESSIONAL PROFILE**

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- Good knowledge of semiconductor (SC) materials (group-III Nitride based materials, QDs, Thin film PV materials: CZTS, CdTe) and Solid state devices
  - Technical skills in SC material growth, fabrications, processing and characterizations.
  - Course conducting in Masters and Undergraduate level
  - Supervising MS and PhD students
  - Ability to work individually and being a member of a group
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### **RESEARCH INTERESTS**

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- Semiconductor materials growth (Group-III Nitride, Nanostructure, Thin film for solar cell)
  - Nano-photonics (Photonic crystals)
  - Optical resonators: Microdisks and distributed Bragg reflectors (DBR)
  - Thin film photovoltaic (PV) materials: CZTS and CdTe
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### **TECHNICAL SKILLS**

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- MBE (Riber Compact 21, ULVAC)
- SEM (ZEISS-SUPRA™ 40, JEOL)
- Sputtering technique, Thermal evaporator ion and Chemical bath deposition
- Annealing process
- Clean room stuffs (Fabrications, RIE)
- E-beam (Raith - Elphy Plus), EDS, AFM, XRD (Panalytical)
- Photoluminescence (PL) and  $\mu$ -PL
- Characterization of solar cell

### **BOOK/BOOK CHAPTER**

Ho Soon Min & **Mohammad Junaebur Rashid**, A Review of Thin Film Chalcogenide Photovoltaic Materials, Chapter 6, 79-91, Renewable Energy Sources & Environment Protection, International Research Publication House, ISBN: 978-93-87388-19-2, 2018.

### **PUBLICATIONS / WORK SUBMITTED / WORK IN PROGRESS**

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1. Farjana Akter Jhuma, Marshia Zaman Shaily, **Mohammad Junaebur Rashid**, Towards high efficiency CZTS solar cell through buffer layer optimization, Materials for Renewable and Sustainable Energy, (2019) 8:6 (Springer). <https://doi.org/10.1007/s40243-019-0144-1>.
  2. **Mohammad Junaebur Rashid**, Abdullah Al Mamun, Md. Samiul Islam Sadek, Tasnia Hossain, Sarwar Hasan, Simulation study of GaN/Al<sub>1-x</sub>Ga<sub>x</sub>N quantum well (QW) operating in the UV region, Journal of Physical Science, Manuscript accepted, 2019.
  3. S Galib Hashmi, **Mohammad Junaebur Rashid**, Zahid Hasan Mahmood, Mahbulul Hoq & Md. Habibur Rahman, Investigation of the impact of different ARC layers using PC1D simulation: application to crystalline silicon solar cells, Journal of Theoretical and Applied Physics, Volume 12, Issue 4, pp 327–334, December 2018 ( <https://doi.org/10.1007/s40094-018-0313-0>).
  4. S Sarwar, S Islam, T Hosain, H Sarwar and **M J Rashid**, A comparison of the absorbed power for periodic, disordered and deterministic aperiodic arrays of Silver nanoparticles, IOP Conf. Series: Journal of Physics: Conf. Series 1086 (2018) 012008.
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5. S Islam, K. M A Hussain and **M J Rashid**, Deposition and Optical Characterization of ZnO Thin films on Glass Substrate, IOP Conf. Series: Journal of Physics: Conf. Series 1086 (2018) 012009.
  6. Tasnia Hossain, **Mohammad Junaebur Rashid**, Eric Frayssinet, Nicolas Baron, Benjamin Damilano, Fabrice Semond, J. Wang, Lise Durand, Anne Ponchet, Francois Demangeot, and Yvon Cordier, Crack Statistics and Stress Analysis of Thick GaN on Patterned Silicon Substrate, Phys. Status Solidi B 2018, 1700399.
  7. I. Hossen, M. S. Rahman, K. M. A. Hussain, **M. J. Rashid**, Effect of Rinsing on Zn(O,S) Film Grown by Chemical Bath Deposition, South Asian Journal of Engineering and Technology Vol.3, No.15, pp 1–11, 2017.
  8. T. Kamal, S. Parvez, K. M. Khabir, R. Matin, T. Hossain, H. Sarwar, M. S. Bashir, **M. J. Rashid**, Chemical Bath Deposition of CdS layer for Thin Film Solar Cell, South Asian Journal of Research in Engineering Science and Technology (SAJREST), Volume: 01, Issue: 02, pp 605-612, 2017.
  9. Samiya Mahjabin, Md. Sharifuzzaman Shakel, **Mohammad Junaebur Rashid**, Md. Fakhru Islam, Zahid Hasan Mahmood, Characterization of Silicon Nanowires Synthesized By Electroless Metal Deposition, International Journal of Nanotechnology and Applications ISSN 0973-631X Volume 11, Number 1, pp. 35-44, 2017.
  10. Tasnim Kamal, Sheikh Parvez, Rumana Matin, Mohammad Shahriar Bashir, Tasnia Hossain, Hasan Sarwar, **Mohammad Junaebur Rashid**, Chemical bath deposition and characterization of CdS layer for CZTS thin film solar cell, 2<sup>nd</sup> International Exchange and Innovation Conference on Engineering and Sciences (IEICES), 33-34, October 14, 2016, Kyushu University, Fukuoka, Japan.
  11. Zaihasraf Zakaria, Puvaneswaran Chelvanathan, **Mohammad Junaebur Rashid**, Md Akhtaruzzaman, Mohammad Mezbaul Alam, Zeid Abdullah Al-Othman, Abdulrahman Alamoud, Kamaruzzaman Sopian, and Nowshad Amin, *Effects of sulfurization temperature on Cu<sub>2</sub>ZnSnS<sub>4</sub> thin film deposited by single source thermal evaporation method*, Japanese Journal of Applied Physics 54, 08KC18, July, 2015.
  12. Tasnia Hossain, **M. J. Rashid**, M. R. Alam, *A study on the distribution of stress in thin epitaxial GaN on patterned silicon substrate*, International Journal of Enhanced Research in Science Technology & Engineering, ISSN: 2319-7463, Vol. 4 Issue 3, 233-236, March, 2015.
  13. P. Chelvanathan, Y. Yusoff, F. Haque, M. Akhtaruzzaman, M.M. Alam, **M.J. Rashid**, K. Sopian, N. Amin, *Growth and characterization of RF-sputtered ZnS thin film deposited at various substrate temperatures for photovoltaic application*, Applied Surface Science 334, 138–144, March 2015.
  14. M. N. Imamzai, M. A. Islam, **M. J. Rashid**, T. H. Chowdhury, M. M. Alam, Z. A. Alothman, K. Sopian, N. Amin, Optimization of graded bandgap Cd<sub>1-x</sub>Zn<sub>x</sub>Te thin film solar cells from numerical analysis, Chalcogenide Letters Vol. 11, No. 11, p. 541 – 551, November 2014.
  15. J. Zuniga-Perez, E. Mallet, R. Hahe, **M. J. Rashid**, S. Bouchoule, C. Brimont, P. Disseix, J. Y. Duboz, G. Gommé, T. Guillet, O. Jamadi, X. Lafosse, M. Leroux, J. Leymarie, Feng Li, F. Réveret and F. Semond, *Patterned silicon substrates: A common platform for room temperature GaN and ZnO polariton lasers*, Applied Physics Letters 104, 24113, June, 2014.
  16. Thierry Guillet, Rereao Hahe, Olfa Kamoun, Christelle Brimont, Pierre Valvin, Sihem Jaziri, Dimitri Solnyshkov, Guillaume Malpuech, Sophie Bouchoule, Xavier Lafosse, Gilles Patriarche, Feng Li, Mathieu Leroux, **M.J. Rashid**, Fabrice Semond, Jesús Zúñiga-Pérez, *Polariton condensates in ZnO microcavities: generation, dynamics and localization*, 15th International Conference on Light-Matter Coupling in nanostructures, Jun 2014, Montpellier, France.
  17. M. N. Imamzai, M. J. Rashid, N. A. Khan, Q. Huda, M. Akhtaruzzaman, K. Sopian, N. Amin, Prospects of novel CdZnTe thin film solar cells from numerical analysis, 2nd International Conference on Green Energy and Technology (ICGET), pp 126-131, 5-6 Sept 2014.
  18. N. Dhar, T. H. Chowdhury, M. A. Islam, N. A. Khan, **M. J. Rashid**, M. M. Alam, Z. A. Alothman, K. Sopian, N. Amin, *Effect of N-Type Transition Metal Dichalcogenide Molybdenum Telluride (N-MoTe<sub>2</sub>) in Back Contact Interface of Cadmium Telluride Solar Cells from Numerical Analysis*, Chalcogenide Letters, Vol. 11, No. 6, p. 271 – 279, June 2014.
  19. F. Haque, K. S. Rahman, M. A. Islam, **M. J. Rashid**, M. Akhtaruzzaman, M. M. Alam, Z. A. Alothman, K. Sopian, N. Amin, *Growth Optimization of Zns Thin Films by RF Magnetron Sputtering as Prospective Buffer Layer in Thin Film Solar Cells*, Chalcogenide Letters Vol. 11, No. 4, p. 189 – 197, April 2014.
  20. Hasan Sarwar, Md. Mydul Islam, **M. Junaebur Rashid**, Tasnia Hossain, *Study of Optical Radiation Efficiency of nanoparticles*, Nanosci. Nanotechnol. Lett. 6, 170-173, February 2014.
  21. C. Brimont, T. Guillet, S. rousset, D. Néel, X. Checoury, S. David, P. Boucaud, D. Sam-Giao, B. Gayral, **M. J. Rashid**, F. Semond, M. Mexis, T. Bretagnon, *Imaging of photonic modes in an AlN-based photonic crystal probed by an ultra-violet internal light source*, Optics Letters, Vol. 38, Issue 23, pp. 5059-5062, November 2013.
  22. M. L. Palash, Masum Billah, **M. J. Rashid**, *Coverage planning of mobile WiMax for urban and suburban environment using power scheduling scheme*, International Journal of Innovative Technology and Exploring Engineering (IJITEE), ISSN: 2278-3075, Volume-3, Issue-5, October 2013.
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23. Maroun El Khoury, A. Courville, B. Poulet, M. Teisseire, E. Beraudo1, **M. J. Rashid**, E. Frayssinet, B. Damilano, F. Semond, O. Tottereau and P Vennéguès, *Imaging and counting threading dislocations in c-oriented epitaxial GaN layers*, Semicond. Sci. Technol. 28, 035006, February, 2013.
  24. T. Hossain, J. Wang, E. Frayssinet, S. Chenot, M. Leroux, B. Damilano, F. Demangeot, L. Durand, A. Ponchet, **M. J. Rashid**, F. Semond, and Y. Cordier, *Stress distribution of 12  $\mu\text{m}$  thick crack free continuous GaN on patterned Si (110) substrate*, Physica status solidi C 10, No. 3, 425-428, 2013.
  25. Sam-Giao, D. Néel, S. Sergent, B. Gayral, M. J. Rashid, F. Semond, M. Mexis, T. Guillet, C. Brimont, T. Bretagnon, X. Checoury, S. David and P. Boucaud, *High quality factor AlN nanocavities embedded in a photonic crystal waveguide*, Applied Physics Letters 100, 191104, May, 2012.
  26. Subrata Das, **Md. Junaebur Rashid** and Subrata Kumar Aditya, *Fuzzy logic based adaptive handoff algorithm for heterogeneous network*, Dhaka university Journal of Science, 58(1), 113-117, 2010 (January).
  27. Ahmed Asif Ashraf, Syeda Zinath Aman and **Md. Junaebur Rashid**, *Distance based handoff algorithm in GPRS network*, Journal of the Bangladesh Electronics Society, 9(1-2), 169-179, 2009 (June-December).
  28. **Md. Junaebur Rashid**, Imran Hossain, A. S. M. Moslehuddin, A. H. M. Asadul Huq and Farruk Ahmed, *Evaluation of echo return loss enhancement for LMS and NLMS algorithms for different step sizes*, Journal of the Bangladesh Electronics Society, 5(1), 63-70, 2005 (June).
  29. Ashiqur Rahman, Abdul Alim, **Md. Junaebur Rashid** and Shahida Rafique, *An improved design and frequency planning of a GSM wireless network for Bangladesh region*, Journal of the Bangladesh Electronics Society, 5(2), 99-104, 2005 (December).
  30. **Md. Junaebur Rashid**, Imran Hossain, A. S. M. Moslehuddin, A. H. M. Asadul Huq and Farruk Ahmed, *Performance of echo return loss enhancement for LMS and NLMS algorithms for different sample sizes*, Proceedings of International conference on computer and information technology, 368-373, 2005 (December).
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#### PRESENTATIONS / CONFERENCES / POSTERS

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- [1] Sakin Sarwar, Saiful Islam, Tasnia Hosain, Hasan Sarwar and **Mohammad Junaebur Rashid**, *A comparison of the absorbed power for periodic, disordered and deterministic aperiodic arrays of silver nanoparticles*, P-85, 2nd International Conference on Physics for Sustainable Development & Technology (ICPSDT) 2017, Chittagong, Bangladesh.
  - [2] Tasnim Kamal, Sheikh Parvez, Rummana Matin, Mohammad Shahriar Bashar, Tasnia Hossain, Hasan Sarwar, **Mohammad Junaebur Rashid**, *Chemical Bath Deposition and Characterization of CdS layer for CZTS Thin Film Solar Cell*, 2nd International Exchange and Innovation Conference on Engineering & Sciences (IEICES), October 14, 2016, Kyushu University, Fukuoka, Japan.
  - [3] **M. J. Rashid**, M. M. Islam, T. Hossain and H. Sarwar, *Enhancement of light absorption in thin film solar cell using plasmonic nanoparticles*, 3rd Malaysia-Japan PV workshop, 22-24 September 2014, UKM, Malaysia.
  - [4] M. N. Imamzai, **M. J. Rashid**, N. A. Khan, Q. Huda, M. Akhtaruzzaman, K. Sopian and N. Amin, *Prospects of Novel CdZnTe Thin Film Solar Cells from Numerical Analysis*, ICGET 2014, 5-6 September 2014, Dhaka, Bangladesh.
  - [5] **M. J. Rashid**, *Group-III Nitride based optical resonators for UV emitters and prospects of nitrides for photovoltaic devices*, 2nd Malaysia-Japan PV workshop, 9-10 January 2014, UKM, Malaysia.
  - [6] **M. J. Rashid**, D. Néel, S. Sergent, M. Mexis, D. Sam-Giao, T. Guillet, C. Brimont, T. Bretagnon, F. Semond, B. Gayral, S. David, X. Checoury, P. Boucaud, *Group-III nitride 2D-PC microcavities integrated on silicon*, SPIE Photonics Europe, Belgium, April, 2012.
  - [7] **M. J. Rashid**, D. Néel, S. Sergent, M. Mexis, D. Sam-Giao, T. Guillet, C. Brimont, T. Bretagnon, F. Semond, B. Gayral, S. David, X. Checoury, P. Boucaud, *(Al,Ga)N-based photonic crystal nano-cavities for UV emitters integrated on silicon*, Semiconano, 3<sup>rd</sup> International Workshop on Epitaxial Growth and Fundamental Properties of Semiconductor Nanostructures, Austria, September, 2011.
  - [8] **M. J. Rashid**, E. Frayssinet, S. Vézian, M. Leroux, O. Tottereau, P. Vennéguès, M. Nemoz, J. Massies and F. Semond, *A deeper understanding on the effect of in-situ Si treatments on (Al,Ga)N layers*, 9<sup>th</sup> International Conference on Nitride Semiconductors, Glasgow, Scotland, July, 2011.
  - [9] **M. J. Rashid** and F. Semond, *Whispering Gallery Mode*, in the lab CNRS-CRHEA, Valbonne, France, March, 2011.
  - [10] **M. J. Rashid**, F. Semond, M. Nemoz, O. Tottereau, P. Vennéguès, S. Chenot, and Y. Cordier, *Growth of crack-free thick GaN on patterned Si(110) Substrates*, International Workshop on Nitride Semiconductors, Tampa, Florida, USA, September, 2010.
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[11] **Md. Junaebur Rashid**, Imran Hossain, A. S. M. Moslehuddin, A. H. M. Asadul Huq and Farruk Ahmed, *Performance of echo return loss enhancement for LMS and NLMS algorithms for different sample sizes*, International conference on computer and information technology, 2005 (December).

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#### **ACADEMIC EMPLOYMENT (Teaching and Research)**

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June 2016 – to present **Associate Professor**, Department of Electrical and Electronic Engineering, University of Dhaka, Bangladesh.

Duties: Teaching, research and supervising PhD & MSc Students.

Taught courses at university level:

- Nanoscience and technology
- Electronic devices
- Solid state physics
- Characterization of materials and semiconductors

June 2014 – June 2016 **Assistant Professor**, Department of Electrical and Electronic Engineering, University of Dhaka, Bangladesh.

Duties: Teaching, research and supervising PhD & MSc Students.

Taught courses at university level:

- Electronic devices
- Solid state physics

Dec. 2013 – June 2014 **Post Doctoral Researcher**, Solar Energy Research Institute (SERI), Universiti Kebangsaan Malaysia (UKM).

Duties: Research on the development of different PV materials, CZTS by MBE, guide PhD and MSc Students, write project for research grants, coordination of the research group.

Mar. 2013 – to Dec. 2013 **Assistant Professor**, Department of Applied Physics, Electronics and Communication Engineering, University of Dhaka, Bangladesh.

Duties: Teaching, research and supervising MSc Students.

Taught courses at university level:

- Electronic devices
- Applied heat and thermodynamics

Dec. 2012 – Feb. 2013 **Lecturer**, Department of Applied Physics, Electronics and Communication Engineering, University of Dhaka, Bangladesh.

Duties: Teaching, research and supervising MSc Students.

Aug. 2009 – Nov. 2012 **PhD Student** of Physics in CNRS-CRHEA, University of Nice SA, France.

Duties: Development of group III-Nitride based UV light emitters integrated on silicon and by MBE the surface treatment to reduce the dislocation density in the GaN epilayer.

Oct. 2007 – Jul. 2009 **Lecturer**, Department of Applied Physics, Electronics and Communication Engineering, University of Dhaka, Bangladesh.

Duties: Teaching, research, curriculum Development and supervising MSc Students.

Taught courses at university level:

- Modern Physics
  - Engineering Mechanics
  - Renewable Energy
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#### **ACADEMIC QUALIFICATIONS**

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**PhD** PhD in Physics (with highest distinction), Nano group, CNRS-CRHEA, University of Nice SA, France.

Year: August 2009 – November 2012

Scholarship: Erasmus Mundus (European Commission)

Thesis title: Fabrication and study of AlN optical resonators containing GaN quantum dots for UV emitters and new concepts for the growth of GaN on silicon substrates.

Overview of the thesis:

My PhD thesis was focused on the fabrication and characterization of (III-Nitride)-based short wavelength micro-nanophotonic structures integrated on silicon. The work mainly began with the growth of GaN/AlN QDs by NH<sub>3</sub>-assisted molecular beam epitaxy (MBE) followed by the fabrication of optical micro-nanocavities (microdisks and photonic crystals). To evaluate the samples, structural and optical characterizations are performed afterwards. Apart from this, the work also deals with the in situ Si/NH<sub>3</sub> treatment for the first time in the MBE reactor to reduce the defects of the hetero-epitaxially grown GaN on silicon.

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**MS** Applied Physics, Electronics and Communication Engineering, University of Dhaka, Bangladesh.

Passing year:2006

Position:1<sup>st</sup> Class 1<sup>st</sup> (Thesis group)

**BSc** Applied Physics, Electronics and Communication Engineering, University of Dhaka, Bangladesh.

Passing year: 2004

Position: 1<sup>st</sup> Class 2<sup>nd</sup>

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#### SCHOLARSHIPS AND AWARDS

- 1) **Best presenter award in ICPSDT 2017.**
- 2) **Best paper winner award in ICGET 2014.**
- 3) **Erasmus Mundus (European Commission)** scholarship for PhD
- 4) **Awarded University Gold Medal (2006)** for the outstanding academic result in M.S.

#### STUDENT SUPERVISION

Level	Name	Title	Role	Status
M.S.	Saiful Islam	A Systematic Study on Chemically Deposited CdS Thin Films	Main	Completed
M.S.	Samia Islam	Fabrication and Characterization of ZnO Thin Films on Glass Substrate	Main	Completed
M.S.	Md Mahmudul Hasan	Study the Role of OVC and i-Zno Layers in CIGS Solar Cell	Main	Completed
B.Sc.	Farjana Akter Jhuma et al	Towards high efficiency CZTS solar cell through buffer layer optimization	Main	Completed
B.Sc.	Md. Samiul Islam et al	Analysis of Gallium Arsenide based two-dimensional photonic crystal	Co	Completed
B.Sc.	Laila Naznin Nahar	Numerical Study of Hydrogenated Amorphous Silicon (A-Si: H) Solar Cell	Main	Completed
B.Sc.	Saif Munna et al	Chemical Bath Deposition and Characterization of ZnS layer for Thin Film Solar Cell	Main	Completed
B.Sc.	Tasnim Kamal et al	Chemical Bath Deposition of CdS layer for CZTS Thin Film Solar Cell	Main	Completed
M.S.	Syed Ahmed Al Mueyed	Study of Aluminium Nitride based two-dimensional photonic crystal	Main	Completed

M.S.	Fatema Farzana	Study of Group III-Nitride based Microdisk Optical Resonator	Main	Completed
M.S.	Abdullah Al Mamun	GaN/AlN QW based UV emitter	Main	Completed
M.S.	Farha Diba	Group-III nitride based distributed Bragg reflectors	Main	Completed
M.S.	Subrata Das	Fuzzy logic based adaptive handoff algorithm for heterogeneous network	Co	Completed
M.S.	Ahmed Asif Ashraf,	Distance based handoff algorithm in GPRS network	Main	Completed

## OTHERS

### PERSONAL INFORMATION

Date of Birth: 1st January, 1982.  
Place of Birth: Dhaka, Bangladesh  
Nationality: Bangladeshi by Birth.  
Marital Status: Married.

### COMPUTER SKILLS

Microsoft office, language C, AutoCad, Origin, MATLAB

### LANGUAGE PROFICIENCY

Bengali (Mother tongue), English (Fluent) and French (Moderate).

### ACTIVITIES

- 1) **Editorial Board Member**, Journal of Nano Science and Quantum Physics
- 2) **General Secretary** of APECE-EEE Alumni Association
- 3) Organizing Secretary of ICIEV 2014.
- 4) Member Bangladesh Electronics Society.
- 5) Worked as a volunteer for many international conferences, such as E-MRS12, ICIEV13, etc.
- 6) Former President of Electronics & Communication Club, University of Dhaka, 2005.

### INTERESTS

Football, Cricket, Table Tennis, Travelling, Stamp Collection, Meditation and Social work.

## REFERENCES

- 1) Dr. Fabrice Semond  
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Rue Bernard Grégory, 06560 Valbonne, France.  
Tel: +3304 93 95 78 19 Fax: +3304 93 95 83 61  
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- 2) Professor Dr. Nowshad Amin,  
Institute of Sustainable Energy  
Universiti Tenaga Nasional (UNITEN)  
Putrajaya, Malaysia.  
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