Green electricity generation from green jute leaves

K.A.Khan[1], Shahinul Islam[2], Md. Akramuzzaman[2], Nadia Akter Mokta[3] and Md. Masum Reza[4]

[1]Department of Physics, Jagannath University, Dhaka-1100, Bangladesh
E-mail: kakhan01@yahoo.com , Phone Number: +8801911357447
[2]Bangladesh Atomic Energy Regulatory Authority, Agargaon, Sherebanglanagar, Dhaka, Bangladesh
E-mail: akrambaera@gmail.com, Phone: +8801787718850
[3]Bangladesh Atomic Energy Regulatory Authority, Agargaon, Sherebanglanagar, Dhaka, Bangladesh
E-mail:nadia.phys@gmail.com, Phone: +8801782437628
[4]Bangladesh Atomic Energy Regulatory Authority, Agargaon, Sherebanglanagar, Dhaka, Bangladesh
E-mail:masumbaeragmail.com, Phone: +8801842544605

Abstract

A new method of electricity generation based on jute leaves has been developed at the department of physics, jagannath university, dhaka- 1100, bangladesh. This electricity generation method has several advantages over the conventional electricity production. This method is likely to generate the employment at particularly in the rural areas of where grid electricity is absent. This research work reports an invention made on jute leaves electric power plant to enhance the jute leaves electricity production. The efficiency of the jute leaves electricity production device, short circuit current (Isc), open circuit voltage (Voc), temperature effect of the jute leaves malt, p^H of the jute leaves malt, titratable acidity of the jute leaves malt, generation of jute leaves electricity, storage system of the jute leaves electricity, particular utilization of jute leaves electricity, I-V characteristics of the jute leaves, classification of jute leaves, longevity of jute leaves malt for jute leaves electricity generation, preparation of jute leaves electric unit cell, module, panel, arrays and the constituent elements of the jute leaves, voltage regulation, internal resistance of the cell and efficiency of the cell have been studied. The chemical reactions of the jute leaves electrochemical cell have also been studied. In experimental study, it is shown that the maximum efficiency of the jute leaves electricity production device is ≈ 35%, the ph of the jute leaves malt is ≈ 4.9(without water), pH of the jute leaves malt is ≈ 5.2 (with 10% solution),the titratable acidity of the jute leaves malt is ≈ 0.90%. It is also found that hydrogen gas is generated from the jute extract during electricity generation fom jute leaf extract.

Keywords: Jute leaves electricity, DC appliances, I-V characteristics, power variation, pH variation, Cultivation, Hydrogen gas

---

I. Introduction

Electricity has a great impaction development of a society. In Bangladesh only 30-35 per cent of total population can use electricity from national grid. Energy consumption per capita is extremely low compared to neibouring countries[1]. It is half of nepal and one fourth of india. In bangladesh average demand of electricity is 5,200 mw, but average generation is 3,300 mw. Low consumption of electricity is affecting the entire development of the country[2]. Due to power shortage education, business, health, services, agriculture and other productive works have been constantly hampered. It can not expect that in near future it will be possible to extend the grid system up to the remote village in the country. The total power generation in bangladesh mostly depends of fossil fuels[3-11]. Though use of fossil fuels enhances green house emission but for electricity generation natural gas is the major energy source (90%) and bangladesh will not be able to arrange electricity from fusion reactors in near future[12-19]. So it is required to search alternative sources of electric power. Electricity can play a vital role in poverty alleviation in this country. Government programmes and messages play strong role in development of society in under developed countries like Bangladesh.to keep this in mind pathor kuchi leaf have been used to produce electricity. The electricity generation by pathor kuchi leaf (jute leaves) was prototype[20-27]. It has been observed that the longsivity of the voltage generation from pathor kuchi leaf (jute leaves) very satisfactory. So we can cultivate the jute leaves in our field and can generate more electricity by setting up a power plant by using pathor kuchi leaf jute leaves can show a guide line to the nation of Bangladesh. It is very new one research project in Bangladesh.

II. Methodology

Fig.1a Researcher Is Cultivating Jute Leaves Fresh Tree

Fig.1 shows the jute leaves tree for electricity generation. The leaf was collected from the leaf and then it was blended manually by a machine (Fig.2). The jute leaves tree has been cultivated in a soil pot.

Fig.2 (A) Fig.2 (B) Fig.2 (C)

Fig.2 Preparation Of Jute Leaves Extract By A Manual Machine In Fig.2 (A) And Filtration In Fig.2 (B)

Fig.2 Shows A Prototype Manual Machine For Preparation Of Jute Leaves Extract. It Has Been Prepared Manually. After Preparation Of Jute Leaves Extract It Has Been Filtered And Then It Was Used For Electricity Preparation.

Fig.3 (a) Design and fabrication of jute leaves module

Fig.3 (B) Complete Cycle of Jute Leaves Electricity Generation System

Fig.3 an experimental set up for a jute leaves module in both series and parallel connection inside the box (without load) in Fig.3 (a) and complete cycle of jute leaves electricity generation system with a load in Fig.3 (b)

It is shown in fig.3, the jute leaves modules is different for different electrodes. The electrodes were made by zinc and cop per materials. The electrolyte was prepared by jute leaves extract with different concentration. The connecting material was made by copper wire. The box was made by plastic materials. Each box has 6 compartments. The electrodes were placed in each boxes are in parallel connection for making jute leaves electrochemical cell. The connections among the jute leaves electrochemical cells are in series combinations. The electrolyte was put in each compartment and then electricity was generated. It is mentioned t hat the produced electricity was dc. To make it ac it is needed an inverter which can convert electricity from dc to ac.

Fig.4 An experimental set up jute leaves electric module with dc load (table fan and LED bulb)

Fig.4 shows the practical utilization of jute leaves electricity with a dc fan. It can be used for any kind of dc appliances a load. The calibrated multimeters were used to measure current, voltage and power accurately.

III. Results and discussion

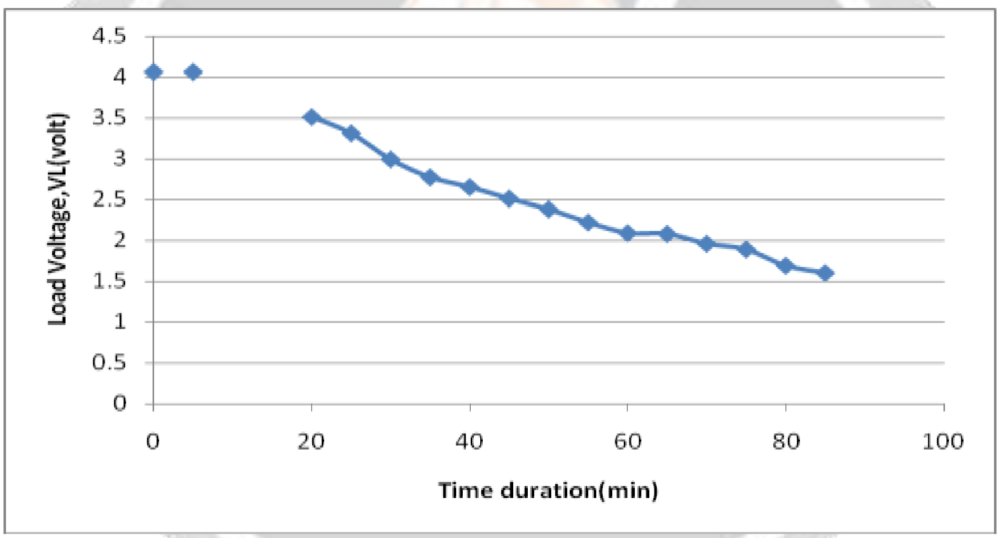

Fig.5 variation of load voltage with the variation of time duration

Fig.5 Shows The Variation Of Load Voltage With The Variation Of Time Duration For 80 Minutes On 1st Day With 12 Volt Dc Fan. It Is Shown That The Load Voltage Variation From 4.06 Volt To 1.6 Volt. The Change Of Load Voltage Variation Was 2.46 V.

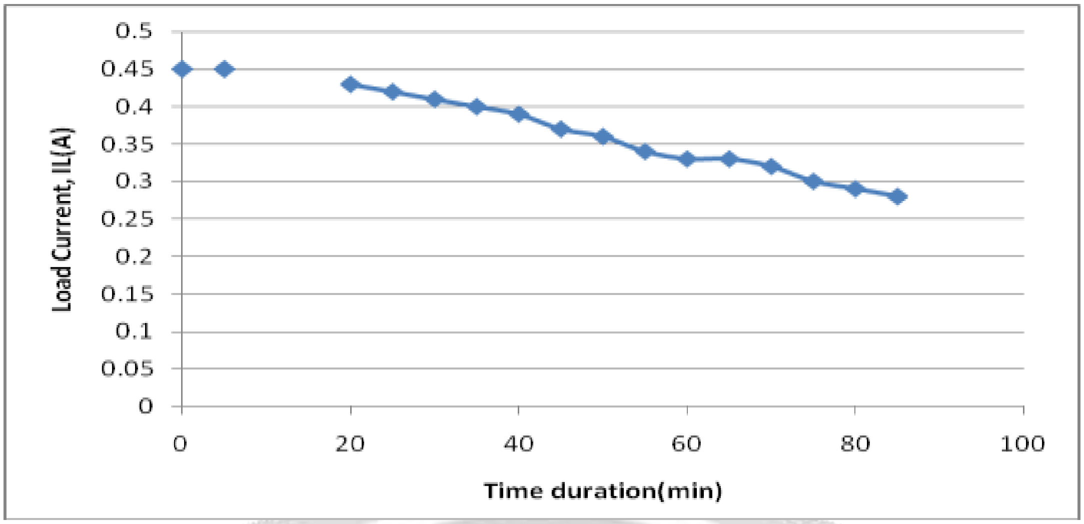

Fig. Variation of load current with the variation of time duration

Fig.6 shows the variation of load corrent with the variation of time duration for 80 minutes on 1st day with 12 volt dc fan. It is shown that the voltage variation from 0.45 a to 0.28 A. The change of load current variation was 0.17 A

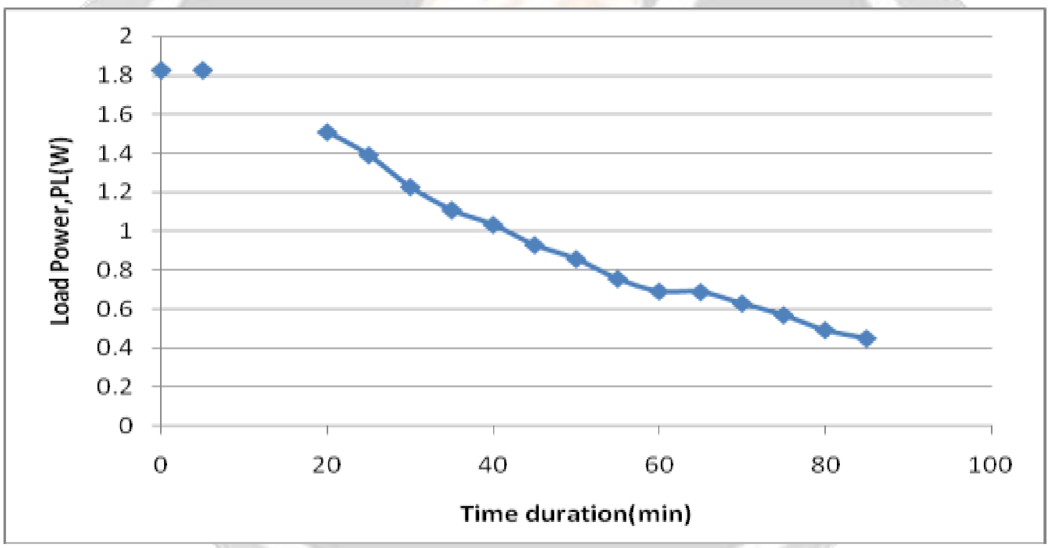

Fig.7 variation of load power with the variation of time duration

Fig.7 shows the variation of load power with the variation of time duration for 80 minutes on 1st day with 12 volt dc fan. It is shown that the load power variation from 1.83 w to 0.45 w. The change of load power variation was 1.38 w.

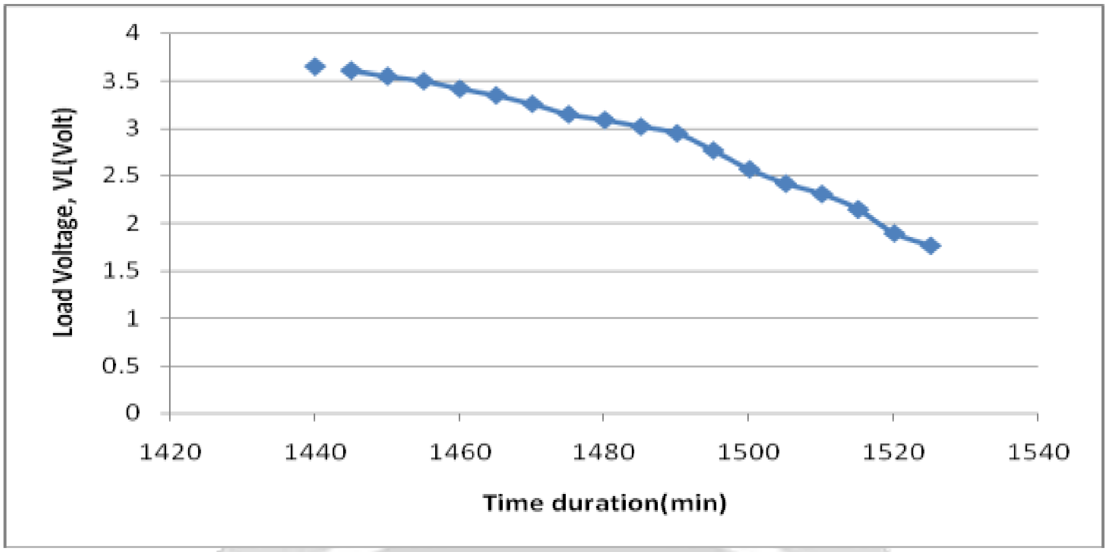

Fig.8 variation of load voltage with the variation of time duration

Fig.8 shows the variation of load power with the variation of time duration for 1225 minutes on 2nd day with 12 volt dc fan. It is shown that the voltage variation from 3.65 v to 1.77 v. The change of load voltage variation was 1.88 v.

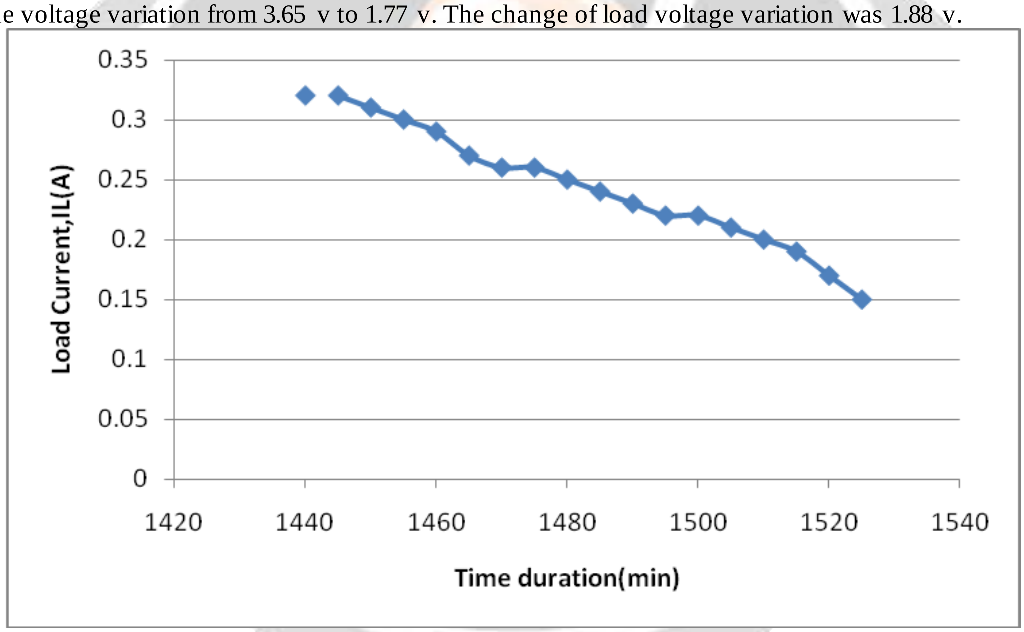

Fig.9 variation of load current with the variation of time duration

Fig.9 shows the variation of load current with the variation of time duration for 1225 minutes on 2nd day with 12 volt dc fan. It is shown that the voltage variation from 0.32 a to0.15 A. The change of load current variation was 0.17 A

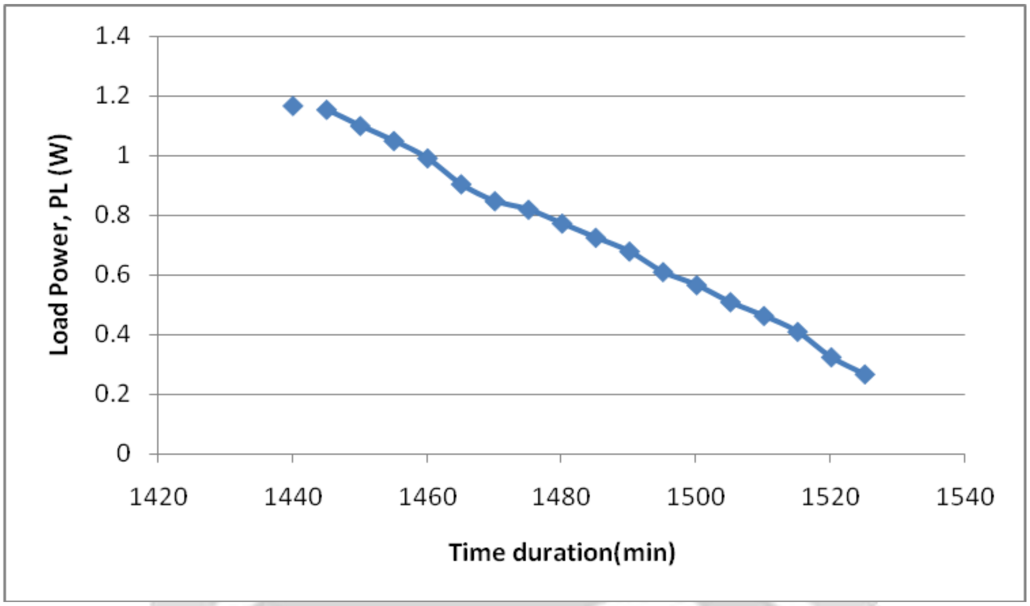

Fig.10 variation of load power with the variation of time duration

Fig.10 shows the variation of load power with the variation of time duration for 1225 minutes on 2nd day with 12 volt dc fan. It is shown that the load power variation from 1.17 w to 0.27 w. The change of load power variation was 0.90 v.

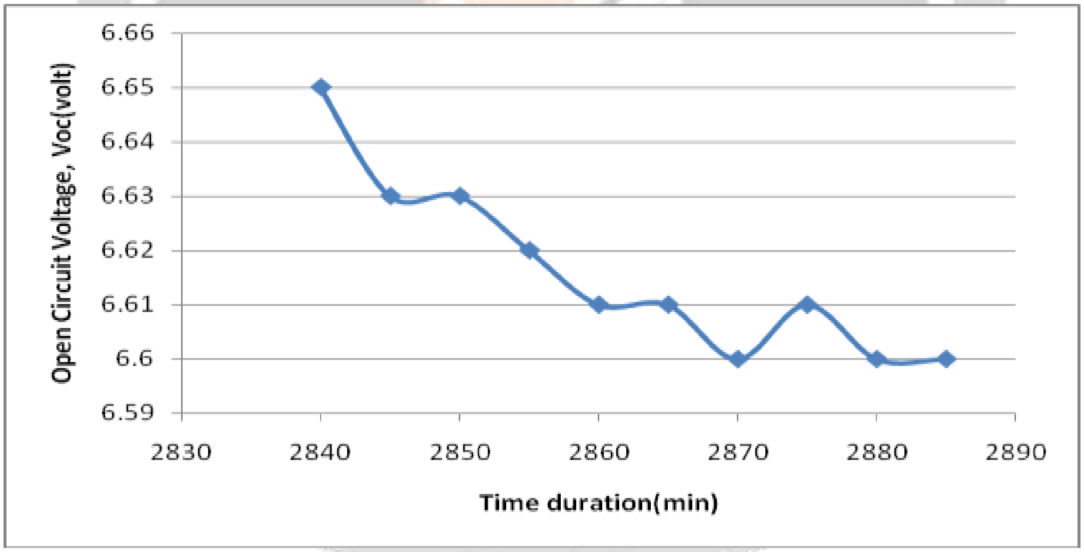

Fig.11 variation of load opencircuit voltage with the variation of time duration

Fig.11 shows the variation of open circuit voltage with the variation of time duration for 2885 minutes on 3rd day without load. It is shown that the open circuit voltage variation from 6.65 v to 6.60 v. The change of opencircu it voltage was 0.05 v.

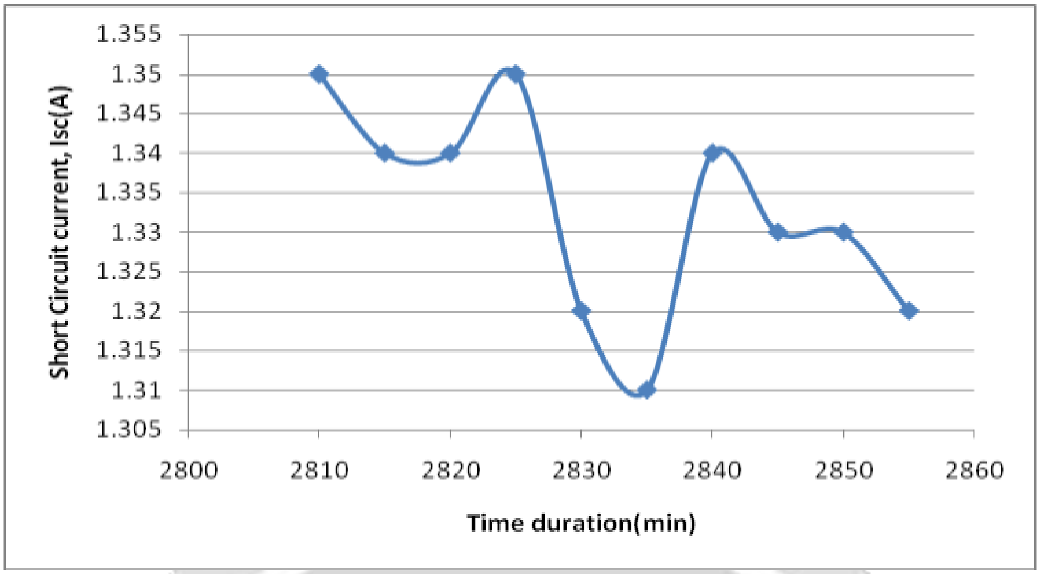

Fig.12 variation of load short circuit current with the variation of time duration

Fig.12 shows the variation of short circuit current with the variation of time duration for 2885 minutes on 3rd day without load. It is shown that the open circuit voltage variation from 1.35 a to 1.32 A. The change of short circuit current was 0.053 A.

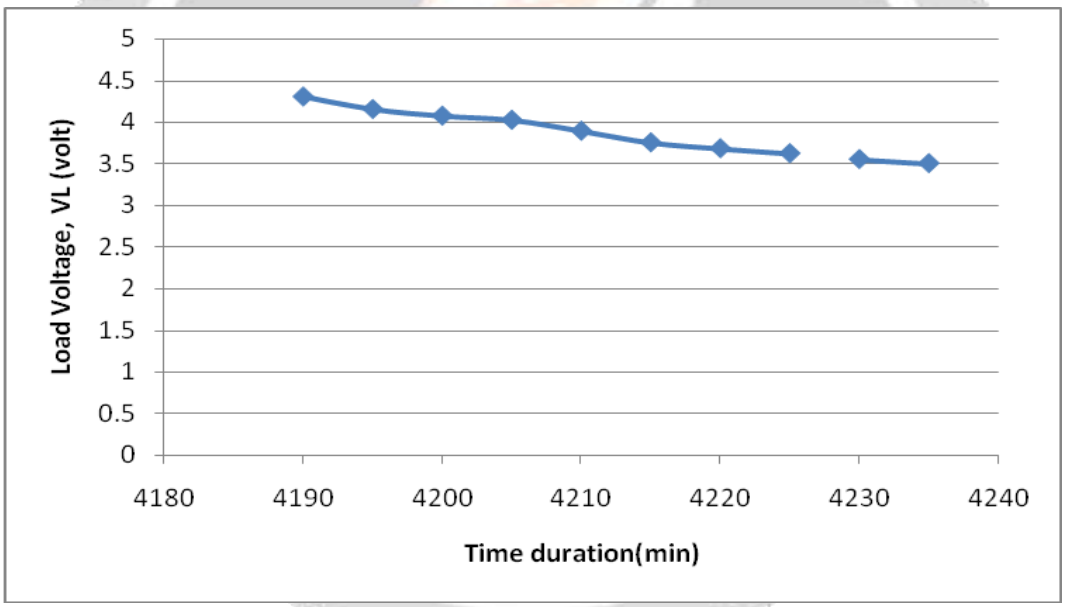

Fig.13 Variation Of Load Opencircuit Voltage With The Variation Of Time Duration

Fig.13 Shows The Variation Of Load Voltage With The Variation Of Time Duration For 4235 Minutes On 4th Day Without Load. It Is Shown That The Open Circuit Voltage Variation From 1.35 A To 1.32 A. The Change Of Short Circuit Current Was 0.03 A.

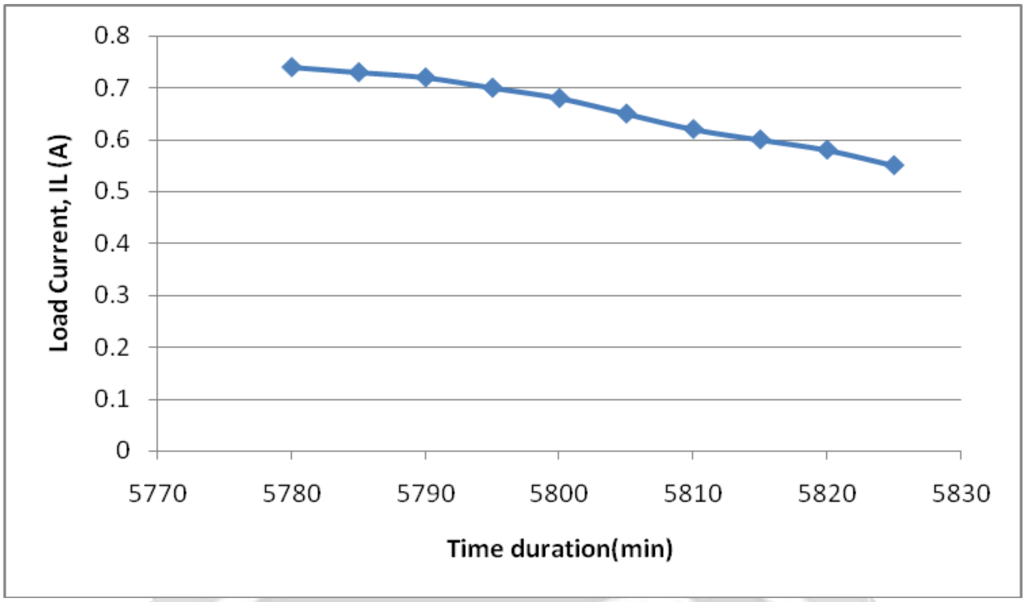

Fig.14 Variation Of Load Current With The Variation Of Time Duration

Fig.14 Shows The Variation Of Load Current With The Variation Of Time Duration For 5825 Minutes On 5th Day Without Load. It Is Shown That The Load Current Variation From 0.74 A To 0.55 A. The Change Of Short Circuit Current Was 0.19 A.

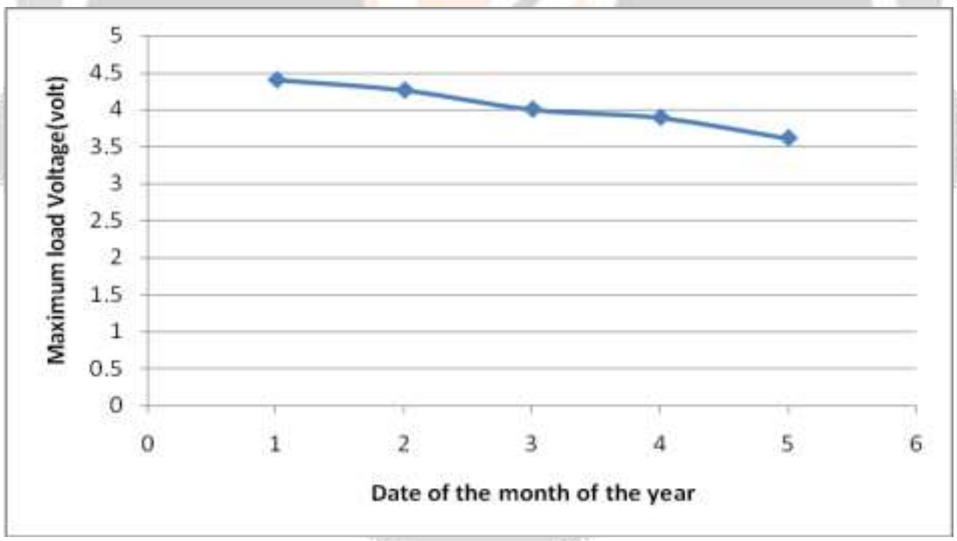

Fig.15 Variation of maximum load voltage with the variation of date of the month of the year

Fig.15 shows the variation of maximum load voltage with the variation of date of the month of the year with load voltage. It is shown that the maximum load voltage variation from 4.40 v to 3.61 v. The change of short circuit current was 0.79 v.

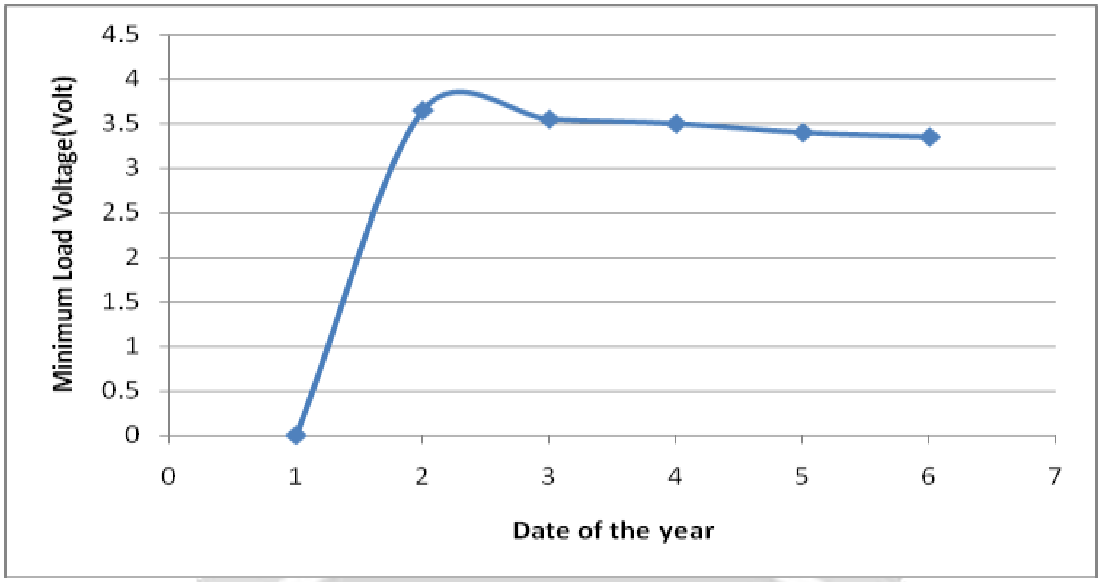

Fig.15 variation of minimum load voltage with the variation of date of the month of the year

Fig.16 shows the variation of minimum load voltage with the variation of date of the month of the year with load voltage. It is shown that the minimum load voltage variation from 3.65 v to 3.35 v. The change of short circuit current was 0.30 v.

References

1. S.A.A. Rizvi, A.M. Saleh, Application of nanoparticle system in drug delivery technology, Saudi Pharm. J. 26 (2018) 64–70.
2.M. Frezza, S. Hindo, D. Chen, A. Davenport, S. Schmitt, D. Tomco, P.Q. Dou, Novel metals and metal complexes as platforms for cancer therapy, Curr. Pharm. Des. 16 (2010) 1813–1825.
3 M. Nasrollahzadeh, M. Maham, S.M. Sajadi, Green synthesis of CuO nanoparticles by aqueous extract of Gundelia tournefortii and evaluation of their catalytic activity for the synthesis of N monosubstituted ureas and reduction of 4-nitrophenol, J. Colloid. Interface Sci. 455 (2015) 245–253.
4 D. Laha, A. Pramanik, J. Maity, A. Mukherjee, P. Pramanik, A. Laskar, P. Karmakar, Interplay between autophagy and apoptosis mediated by copper oxide nanoparticles in human breast cancer cells MCF7, Biochim. Biophys. Acta 2014 (1840) 1–9.
5 S. Tardito, L. Marchio, Copper compounds in anticancer strategies, Curr. Med. Chem. 16 (2009) 1325–1348.
6 P. Yugandhar, T. Vasavi, P.U.M. Devi, N. Savithramma, Bioinspired green synthesis of copper oxide nanoparticles from Syzygium alternifolium (Wt.) Walp: characterization and evaluation of its synergistic antimicrobial and anticancer activity, Appl. Nanosci. 7 (2017) 417–427.
7 I. Capek, Preparation of metal nanoparticles in water-in-oil (w/ o) microemulsions, Adv. Colloid. Interface Sci. 110 (2004) 49– 74.
8 A. Tavakoli, M. Sohrabi, A. Kargari, A review of methods for synthesis of nanostructured metals with emphasis on iron compounds, Chem. Pap. 61 (2007) 151–170.
9 R. Kalyanaraman, S. Yoo, M.S. Krupashankara, T.S. Sudarshan, R.J. Dowding, Synthesis and consolidation of iron nanopowders, Nanostruct. Mater. 10 (1998) 1379–1392.
10 R. Sivaraj, P.K. Rahman, P. Rajiv, S. Narendhran, R. Venckatesh, Biosynthesis and characterization of Acalypha indica mediated copper oxide nanoparticles and evaluation of its antimicrobial and anticancer activity, Spectrochim. Acta A Mol. Biomol. Spectrosc. 14 (2014) 255–258.
11 H.S. Puri, Neem: the divine tree (Azadirachta Indica), Harwood Academic Publishers, Singapore, 1999, pp. 9–21.
12. E.D. Morgan, Azadirachtin, a scientific gold mine, Bioorg. Med. Chem. 17 (2009) 4096–4105.
13 F. Hao, S. Kumar, N. Yadav, D. Chandra, Neem components as potential agents for cancer prevention and treatment, Biochim. Biophys. Acta 2014 (1846) 247–257.
14 F. Ricci, V. Berardi, G. Risuleo, Differential cytotoxicity of MEX: a component of neem oil whose action is exerted at the cell membrane level, Molecules 14 (2008) 122–132.
15 R.V. Priyadarsini, R.S. Murugan, P. Sripriya, D. Karunagaran, S. Nagini, The neem limonoids azadirachtin and nimbolide induce cell cycle arrest and mitochondria-mediated apoptosis in human cervical cancer (HeLa) cells, Free Radic. Res. 44 (2010) 624–634.

16. P. Elumalai, D.N. Gunadharini, K. Senthilkumar, S. Banudevi, R. Arunkumar, C.S. Benson, G. Sharmila, J. Arunakaran, Induction of apoptosis in human breast cancer cells by nimbolide through extrinsic and intrinsic pathway, Toxicol. Lett. 215 (2012) 131–142

17.Md Afzol Hossain, Bithi Paul, **K.A. Khan**, Monika Paul, M.A. Mamun, Md Emran Quayum (2022),Green synthesis and characterization of silver nanoparticles by using Bryophyllum pinnatum and the evaluation of its power generation activities on bio-electrochemical cell, Materials Chemistry and Physics, Elsevier, https://doi.org/10.1016/j.matchemphys.2022.125943, https://doi.org/10.1016/j.matchemphys.2022.125943, Received 24 April 2021; Received in revised form 10 December 2021; Accepted 27 February 2022.

18.Khan K.A.(1999) Copper oxide coatings for use in a linear solar Fresnel reflecting concentrating collector, Published in the journal. of Elsevier, Renewable Energy, An International Journal, WREN(World Renewable Energy Network), UK, RE: 12.97/859,1998, Publication date 1999/8/1, J. Renewable energy, 17(4) :603-608. Publisher - Pergamon, 1999

19. T.A. Ruhane, M.Tauhidul Islam, Md. Saifur Rahman, M.M.H.Bhuiyah, Jahid M.M. Islam, T.I. Bhuiyah, **K.A.Khan** , Mubarak A. Khan(2017) Impact of photo electrode thickness annealing temperature on natural dye sensitized solar cell, Sustainable Energy Technologies and Assessments, Elsevier, http://dx.doi.org/10.1016/j.seta.2017.01.012

20. T.A. Ruhane, M. Tauhidul Islam, Md. Saifur Rahaman, M.M.H. Bhuiyan, Jahid M.M. Islam, M.K. Newaz, **K.A. Khan**, Mubarak A. Khan(2017) Photo current enhancement of natural dye sensitized solar cell by optimizing dye extraction and its loading period, Optik - International Journal for Light and Electron Optics, Elsevier

21. Mehedi Hasan & **K. A. Khan** (2018) Dynamic model of Bryophyllum pinnatum leaf fueled BPL cell: a possible alternate source of electricity at the off-grid region in Bangladesh, Microsystem Technologies Micro - and Nanosystems Information Storage and Processing Systems, Springer, ISSN 0946-7076, Microsyst Technol DOI 10.1007/s00542-018-4149-y

22. K. A. Khan, M. Hazrat Ali, A. K. M. Obaydullah & M. A. Wadud(2019) Production of candle using solar thermal technology, Microsystem Technologies Micro- and Nanosystems Information Storage and Processing Systems, Springer, ISSN 0946-7076, Microsyst Technol, 25(12), DOI 10.1007/s00542-019-04390-7

23. K. A. Khan, S. R. Rasel & M. Ohiduzzaman(2019) Homemade PKL electricity generation for use in DC fan at remote areas, Microsystem Technologies Micro- and Nanosystems Information Storage and Processing Systems, ISSN 0946-7076, Microsyst Technology, 25(12), DOI 10.1007/s00542-019-04422-2

24. Mehedi Hasan & **Kamrul Alam Khan** (2019) Experimental characterization and identification of cell parameters in a BPL electrochemical device, Springer, SN Applied Sciences (2019) 1:1008 | https://doi.org/10.1007/s42452-019-1045-8

25. Lovelu Hassan and **K. A. Khan** (2019) A study on harvesting of PKL electricity, Springer Journal, Microsyst Technol (2020) 26:1031-1041 DOI 10.1007/s00542-019-04625-7, 26(3),PP:1032-1041.

26. K. A. Khan, M. A. Mamun, M. Ibrahim, M. Hasan, M. Ohiduzzaman, A. K. M. Obaydullah, M. A. Wadud, M. Shajahan(2019) PKL electrochemical cell: physics and chemistry, Springer Journal, SN Applied Sciences (2019) 1:1335 | https://doi.org/10.1007/s42452-019-1363-x

27. M.Hazrat Ali, Unesco Chakma,Debashis Howlader, M. Tawhidul Islam and **K.A.Khan** (2019) Studies on Performance Parametersof a Practical Transformer for Various Utilizations, Microsystem Technologies, Springer, Accepted:03 Dec 2019, DOI: 10.1007/s00542-019-04711-w

28. Khan, K.A., Hassan, L., Obaydullah, A.K.M. et al. Bioelectricity: a new approach to provide the electrical power from vegetative and fruits at off-grid region. Microsyst Technol (2018). https://doi.org/10.1007/s00542-018-3808-3

29. **Khan KA**, Bhuyan MS., Mamun M A., Ibrahim M., Hasan L., Wadud M.A.(2018), Organic Electricity from Zn/Cu-PKL Electrochemical Cell, In: Contemporary Advances in Innovative and Applicable Information Technology, Advances in Intelligent Systems and Computing, J. K. Mandal et al. (eds.), © Springer Nature Singapore Pvt. Ltd., 2018, Vol. 812, Chapter 9, p 75-90.

30.AKMAtiqueUllah,MdMahbubulHaque,MahmudaAkter4,AHossain,ANTamanna,Md.MottalebHosen,AKMFazleKibria,MNIKhanand**MKAKhan**(2020)GreensynthesisofBryophyllumpinnatumaqueousleafextractmediatedbiomoleculecappeddiluteferromagneticα-MnO2 nanoparticles, Mater.Res.Express7(1)(2020),015088, IOP publishing Ltd.

31. K.A.Khan, M Hazrat Ali, M. A. Mamun, M. Mahbubul Haque, A.K.M. Atique Ullah, M.N. Islam Khan, Lovelu Hassan, A.K.M. Obaydullah, M.A.Wadud (2020), Bioelectrical Characterization and Production of Nanoparticles (NPs) Using PKL Extract for Electricity Generation, Received: 31 July 2018/Accepted: 4 February 2020, Microsystems Technology, Springer Journal, DOI 10.1007/s00542-020-04774-0.

32. K.A. Khan (2002) Prospect of Solar Energy for Food Supply in Bangladesh. Bangladesh J. of Scientific and Industrial Research BJSIR, 37(1-4)

33. Sen BK., **Khan KA**, Khan MAH, Awal MA(2001) Studies on Optical & thermal properties of black copper solar selective coating on copper substance. Jahang. Phys. Studs. Department of Physics, Jahangirnagar University, Savar, Dhaka, Bangladesh, Vol. 9

34. Ahsan MN, Sen BK, **Khan KA** & Khan MAH(1999) Performance of a Low Cost Built-in-storage Solar Water Heater. Nuclear Science and Applications, 8(1-2):

35. Khan AJ, **Khan KA**, Mahmood ZH & Hossain M(1991) Performance of an Intermittently Tracked Linear Solar Fresnel Reflecting Concentrator. The Dhaka University studies, part B (science) vol. 39(2):

36. Khan KA, Khan AJ & Rabbani KS (1998) Design & performance studies of a Linear Fresnel Reflecting Solar Concentrator-Receiver System, Bangladesh J.Sci. Res. 16 (2):143-146

37. Islam S, **Khan KA**, Islam AKS & Ali MJ(2000) Design, Fabrication & performance study of a Paraboloidal Solar Medical Sterilizer. Bangladesh J.Sci. Res. 18(2): 211-216

38. K.A. Khan (1998) Solar Selective Coating for use in Solar Concentrating Collector Bangladesh J. Sci. Res. 16(2) pp: 249-252

39. K.A. Khan (1999) The performance of a Fresnel Reflecting Concentrating Collector with Auxiliary Heating Bangladesh J. Sci. Ind. Res. 34(2)

40. K.A. Khan (1998) Production of Candles by Solar System in Bangladesh. Nuclear Science & Applications: 7(1-2):

41. K.A. Khan (1997) Field Testing of a Fresnel Reflecting Solar Concentrator, Nuclear Science & Applications. AEC, Dhanka, Bangladesh, 6(1-2):

42. K.A. Khan, Khan AJ & Rabbani KS(1998) Solar Thermal Steam Production & Distillation Device by Fresnel Reflecting Concentrator – Receiver System, Bangladesh J. Sci. Res. 16(2): 221-228.

43. K.A. Khan (2008) Studies on Electricity Generation from Stone Chips Plant (Bryophyllum pinnatum), Int: J.Eng. Tech 5(4): 393-397

44. Islam MS and **K.A. Khan** (2008) Performance Studies on Single Crystal Solar PV Modules for Practical Utilisation in Bangladesh. Int: J.Eng. Tech 5(3): 348-3528

45.K.A. Khan (2008) Studies on Fill Factor(FF) of Single Crystal Solar PV Modules For Use In Bangladesh. Int: J.Eng. Tech 5(3): 328-334

46.K.A. Khan (2008) Performance Studies of Monocrystallinne PV module considering the shadow effect. Int: J.Eng. Tech 5(3): 342-347

47. MS I and **K.A. Khan** (2008) Study the Deterioration of a Monocrystal Solar silicon PV module Under Bangladesh Climate. Int: J.Eng. Tech 5(2):26 3-268

48.Hassan SJ and **K.A. Khan** (2008) Design, Fabrication and Performance Study of a Single phase Inverter for use in Solar PV system. Int: J.Eng. Tech 5(1):212-216

49.K.A. Khan (2009) Soap Production Using Solar Power. Int: J. Eng. Tech 6(1):414-419

50.K.A. Khan (2009) Wave and Tidal Power Generation: An Overview. Int: J. Eng. Tech 6(1):420-423, March 2009

51.K.A. Khan (2009) .Materials Used in Electricity Generation by Solar Thermal System

52.International J. Eng. Tech 6(1):515-520, June 2009

53.K.A. Khan (2009) Comparative Study on Single Crystal and Polycrystalline solar pv modules for use in Bangladesh climate. Int: J. Eng. Tech 6(1):527-529

54.K.A. Khan (2009) Electricity Generation From Pathor Kuchi Leaf(Bryophyllum Pinnatum). Int.J.Sustain.Agril.Tech.5(7):80-84.

55.K.A. Khan (2009) Community Pathor Kuchi Leaf (PKL) Electricity Generation System. Int: J.Sustain.Agril.Tech.5(6):71-73

56.K.A. Khan (2009) Solar Thermal Studies Of Open Sun Drying (OSD) of Various Crops Under Bangladesh Climatic Condition. Int: J. Sustain. Agril. Tech. 5(7): 85-94.

57.K.A. Khan (2009) An Investigation on Various Solar Cells Under the Climatic Condition of Bangladesh. Int: J. Eng. Tech. 6(3): 547-551, September 2009

58.K.A. Khan and Alam MM (2010) Performance of PKL (Pathor Kuchi Leaf) Electricity and its Uses in Bangladesh. Int. J. SOC. Dev. Inf. Syst. 1(1): 15-20

59.K.A. Khan and Alam MM (2010) Comparative Study of Solar Home System and Pathor Kuchi Leaf Home System with Light Emitting Diode. Int. J. Sustain. Agril. Tech. 5(6): 74-79

60.K.A. Khan and Arafat ME (2010) Development of Portable PKL (Pathor Kuchi Leaf) Lantern. Int. J. SOC. Dev. Inf. Syst. 1(1):

61.K.A. Khan and Bosu R (2010) Performance study on PKL Electricity for Using DC Fan. Int. J. SOC. Dev. Inf. Syst. 1(1): 27-30

62.K.A. Khan and Hossain MI(2010) PKL Electricity for Switching on the Television and Radio. Int. J. SOC. Dev. Inf. Syst. 1(1): 31-36

63.K.A. Khan and Islam MS(2010) Studies on Performance of Solar Photovoltaic System Under the Climate Condition of Bangladesh. Int: J. SOC. Dev. Inf. Syst. 1(1): 37-43

64.Khan KA , Wadud MA, Obaydullah AKM and Mamun MA(2018) PKL (Bryophyllum Pinnatum) electricity for practical utilization. IJARIIE-ISSN(O)-2395-4396, 4(1): 957-966

65.K.A. Khan (2009) Application of Solar Thermal Technology for Various Developing Countries. Int: J. Eng. Tech. 6(6):

66.Saifuddin SM & **K.A. Khan** (2010) Performance Study of Hybrid SPV, ST and BPL/PKL electricity Generation and storage for Practical Utilization in Bangladesh. Int: J. Eng. Tech : ISSN 1812 – 7711, 7(2)

67.Saifuddin SM & **K.A. Khan** (2010) Survey of Hybrid Solar Photovoltaic (SPV) and Solar Thermal (ST) Collectors in Bangladesh. Int: J. Eng. Tech : ISSN 1812 – 7711, 7(3)

68.Saifuddin SM & **K.A. Khan** (2010) Performance Study of Solar Photovoltaic and Solar Thermal Hybrid System Utilized in India. Int: J. Soc. Dev. Inf. Syst. 1 (4) : 10 – 16

69.K.A. Khan (2010) Organic Electricity Generation, Storage and Utilization by PKL (Bryophillum Pinnatum). Int: Journal of Social Development and Information system(IJSDIS).1(6):

70.Sultana J, **Khan KA** and Ahmed MU(2010) Present situation of Solar Photovoltaic System in different countries. ASA University Review, 4(2) ISSN:1997-6925

71.Rahman AA and **K.A. Khan** (2011) The Present situation of the Wave energy in some different countries of the world. IJCIT, ISSN 2078 5828(print),ISSN 2218-5224(online),2(1) Manuscript code:110754

72.Hasnat A,Ahmed P,Rahman M and **Khan KA**(2011) Numerical Analysis for Thermal Design of a Paraboloidal Solar Concentrating Collector. Int: Journal of Natural Sciences(2011),1(3): 68-74

73.K.A. Khan & Rubel AH(2011) Simulated Energy Scenarios of the Power Sector in Bangladesh. ASA University Review, 5(2): 101-110, ISSN:1997-6925

74. Sultana J, **Khan KA** and Ahmed MU(2011) Studies on Hybrid Pathor Kuchi Leaf (PKL)/Bryophyllum Pinnatum Leaf(BPL) and Solar Photovoltaic Electricity Generation. J.Asiat.Soc.Bangladesh.Sci.,37(2):181-188,

75. Sultana J, **Khan KA** and Ahmed MU(2011) Electricity Generation from Pathor Kuchi Leaf(Bryophyllum Pinnatum). J.Asiat.Soc.Bangladesh.Sci.,37(2):167-179

76.Rashid MA, Rashed-Al-Mamun RA, Sultana J, Hasnat A, Rahman M and **Khan KA** (2012) Evaluating the Solar Radiation System under the Climatic Condition of Bangladesh and Computing the Angstrom Coefficients, International Journal of Natural Sciences . 2(1):38- 42. Received: November 2011, Accepted: March 28, 2012.

77. Sultana J, **Khan KA** and Ahmed MU(2012) The Present Situation of Solar Thermal Energy in the World. ASA University Review, 4(2), ISSN:1997-6925

78.Paul S, **Khan KA**, Islam KA, Islam B and Reza MA(2012) Modeling of a Biomass Energy based (BPL) Generating Power Plant and its features in comparison with other generating Plants. IPCBEE vol. 44 (2012) @ (2012) IACSIT Press, Singapore, DOI: 10.7763/ IPCBEE. 44(3):

79.K.A. Khan, Paul S, Zishan SR, Abidullah M, Mahmud S(2012) Design of a Hybrid Model of BPL Electricity Module and Solar Photovoltaic Cell. Int: J. of Sci. Eng. Research. 3(12), ISSN 2229-5518.

80. K.A. Khan, Paul S, Zishan SR, Abidullah M, Mahmud S(2012) A Study on Tidal Power Conversion for Use in Bangladesh. Int: J. of Sci. Eng. Research. 3(12), ISSN 2229-5518.

81.Bhuiyan MSA, **Khan KA** and Jabed MA(2012) A Computerized study on the metrological parameter conversions for rural agribusiness development. J.of Innovation & Development Strategy (JIDS) (J. Innov. Dev. Strategy) J. Innov. Dev. Strategy 6(2):94-98

82. K.A. Khan, Paul S, Zobayer A, Hossain SS(2013) A Study on Solar Photovoltaic Conversion. Int:J. of Sci. and Eng. Research , 4(3), ISSN2229-5518

83. K.A. Khan, Shuva Paul, Abdullah M, Sifat SM and Yousufe MR (2013) Performance Analysis of BPL/PKL Electricity Module. Int:J. of Sci. and Eng. Research, 4(3),ISSN2229-5518

84. K.A. Khan, Paul S, Zobayer A, Hossain SS(2013) A Study on Solar Thermal Conversion. Int:J. of Sci. and Eng. Research, 4(3),ISSN2229-5518

85.Bhuiyan MSA and **Khan KA**(2013) Software Development Studies on the Metrological Conversions for Local Agri-Business Units of Area and Volume Weight Measures. J. of Innovation & Development Strategy (JIDS), Canada, 7(1): ISSN 1997-2571

86.Ahsan MM, Kumar S, **K.A. Khan**, Khanam MN, Khatun R, Akter S, Aheikh MAR, Islam MM, Islam MS, Saha S and Alam MM(2013) Study of Spatial Resolution of a Positron Emission Tomography(PET) System. Jagannath University Journal of Science, 2(1),ISSN 2224 – 1698.

87.Paul S, **Khan KA** and Asaduzzaman (2013) A Analytical Study on Electro chemistry for PKL (Pathor Kuchi Leaf) Electricity Generation System. Published in the Proceedings of IEEE, ENERGYTECH 2013, USA. [Participated and Presented in the "EnergyTech2013Conference sponsored by the Institute of Electrical and Electronic Engineers(IEEE) at Case Western Reserve University in Cleveland, Ohio, USA, 21 May - 23 May, 2013, USA.]

88.Paul S, **Khan KA** and Kundu RK(2013) Design, Fabrication and Performance Analysis of Solar Inverter. Published in the Proceedings of IEEE, ENERGYTECH 2013, USA. [Participated and Presented in the "EnergyTech2013Conference sponsored by the Institute of Electrical and Electronic Engineers(IEEE) at Case Western Reserve University in Cleveland, Ohio, USA, 21 may-23 May ,2013, USA.]

89.Paul S, **Khan KA** and Ripon Kumar Kundu RK (2013) Performance Studies of Mono-Crystal Silicon Solar Photovoltaic module with booster reflector under Bangladeshi Climatic condition. Published in the Proceedings of IEEE, ENERGYTECH 2013, USA. [Participated and Presented in the "EnergyTech2013Conference sponsored by the Institute of Electrical and Electronic Engineers(IEEE) at Case Western Reserve University in Cleveland, Ohio, USA, 21 May-23 May ,2013, USA.]

90.Rahman AA and **K.A. Khan** (2013) Feasibility Studies on WEC (Wave Energy Converter) for use in Coastal Belt at Cox's Bazar of Bangladesh under the Climate Condition of the Bay of Bengal.Int: J. of Engi. and Innovative Technology,3660 East Bay Drive, Apartment no.116 Largo, Florida US,33771 (IMPACT FACTOR:1.895) (ISO 9001:2008 Certified)

91.Hossain M , Alam S and **Khan KA** (2013) A study on low power generation from Pathor Kuchi Leaf (Bryophyllum) for practical utilization in Bangladesh. Int: J. of Engi. and Innovative Technology,3660 East Bay Drive, Apartment no.116 Largo, Florida US,33771 (ISO 9001:2008 Certified)

92.Bakshi M and **Khan KA**(2014) "Electricity Generation from Bryophyllum Pinnatum Leaf (BPL)-An Innovative approach for both Physicist and Chemist". J. of Int: Organization of Sci. Research (IOSR) Review Report (Article id: F42028)

93.Khan KA, Latif A, Alam A, Sultana J and Ali H(2014) A Study on Internal Resistance of the Pathor Kuchi Leaf (PKL) Cell. J. of Agriculture and Environment. 10(1):24-28.

94.Ahasan MN, Quadir DA, **Khan KA** and Haque MS (2014) Simulation of a thunderstorm event over Bangladesh using wrf-arw model. J. of Mechanical Engineering, 44(2) Transaction of the Mechanical Engineering Division, The Institute of Engineers, Bangladesh.

95.Khan KA, Sultana J, Latif MA, Mamun MA and Saime MA (2014) A new approach of increasing the power output of Pathor Kuchi Leaf (PKL) Cell. J.ournal of Agriculture and Environment.10(2):15-19

96.K.A. Khan, Bakshi MH, Mahmud AA (2014) Bryophyllum Pinnatum leaf (BPL) is an eternal source of renewable electrical energy for future world. J. of American Journal of Physical Chemistry3(5):77-83, Published online November 10, 2014(http://www.sciencepublishinggroup.com/j/ajpc) doi:10.11648/j.ajpc.20140305.15 ISSN: 2327-2430 (Print); ISSN: 2327-2449 (Online)

97.Uddin MK, **K.A. Khan**, Sobhan MA, Ahmed F and Nabi MN(2015) On the Implications of Dynamic Wireless Spectrum Management Canons Issues in Uncertainty Use of Cognitive Radio Published in the journal of the Bangladesh Electronics Society Journal (BESJ),15(1-2):17-24

98.Uddin MK, **K.A. Khan**, Ahmed F and Nabi MN(2015) A Concept of Potential Radio Spectrum Administration Seeking Easy Access Spectrum (EAS) Paradigm Figured on Signal to Interference Noise Ratio (SINR) and Interference Thresholds. J. of the Bangladesh Journal of Scientific and Industrial Research, 2015 (in Review).

99.Uddin MK, **K.A. Khan**, Sobhan MA, Ahmed F and Nabi MN(2015) Dispensation of Commons Radio Spectrum Management Framework Issues in Implementation: Challenges and Opportunities. J. of Electronic Engineering, 2015 (in Review)

100.Uddin MK, **K.A. Khan**, Sobhan MA, Ahmed F and Nabi MN(2015) Dispensation of Commons Radio Spectrum Management Using Conceptual Benefit and Cost Analysis Framework Issues in Bangladesh. J. of the Chittagong University Journal of Science, 2015 (in Press)

101.Shamsuzzama M, Sikder S, Siddiqua T, Rahman MS, Bhuiyan MMH, **Khan KA**, and Paul D(2015) Standardization of Gamma Radiation Field for Characterizing Radiation Detecting Instrument at SSDL facilities in Bangladesh. J. of the Bangladesh Journal of Physics (BJP),18: 65-72, ISSN No.: 1816-1081, BPS.

102.Kabir MU, Sobhan MA, **K.A. Khan**, Khan MAR(2015) Broad Network Wide Statistics of TCP Indicator Measurements to Reassume the Status of the Wireless 3G Network Monitoring. Journal of the Journal of the University of Information Technology and Sciences (UITS) Journal. 4(2), ISSN: 2226-3128

103.Khan KA, Islam F, Guha B, Hassan ML and Mostofa MM (2015) Studies on Discharge Characteristics and Temperature effect of PKL (Pathor Kuchi Leaf) Cell. J. of " Bangladesh J. of Agriculture and Environment". 11(2):07-12

104.Sruti RN, Islam MM, Rana MM, Bhuiyan MMH, **Khan KA**, Newaz MK and Ahmed MS (2015) Measurement of Percentage Depth of a Linear Accelerator for 6 MV and 10 MV Photon Energies.J. of Nuclear Science and Applications, AEC, Dhaka, Bangladesh, 24(1-2):29-32.

105.Uddin MK, Sobhan MMA, Ahmed F, **K.A. Khan** and Nabi MN(2025) A potential Electrical and Electronic Debris Management Model and Ecological Impact and Awareness Issues in Bangladesh. Journal of the National University J. of Science. 2(1), ISSN: 1994-7763

106.Akter T, Rubel A, Ahsan M, Mamun MA and **Khan KA** (2016) A Comparative study on PKL (Bryophyllum Pinnatum), Aloe Vera, Lemon and Tomato juice for Electricity Generation, Int: J. of Sci. and Eng. Research (IJSER) - ISSN 2229-5518) 7(11):

107.Hasan MM, **K.A. Khan**, Rahman MN and Islam MZ (2016) Sustainable Electricity Generation at the coastal areas and the Islands of Bangladesh Using Biomass Resource. J. of City University, 2(1): pp 09-13

108. Kabir MU, Ahmed F, Sobhan DMA and **K.A. Khan** (2016) Dispensation of Commons Radio Spectrum Management Framework Issues in Implementation: Challenges and Opportunities. J. of the Bangladesh Electronic Society (BES), (ISSN: 1816-1510), 16(1-2):

109. K.A. Khan, Paul S,Rahman MS,Kundu RK, Hasan MM,Muniruzzaman M and Mamun MA(2016) A study of performance analysis of PKL electricity generation parameters:(An experimental analysis on voltage regulation, capacity and energy efficiency of pathor kuchi leaf (PKL) electricity cell). Power India International Conference (PIICON), 7th, 25-27 Nov. 2016, IEEE , Bikaner, Rajasthan, India.

110. Khan KA, Alam MS, Mamun MA, Saime MA & Kamal MM(2016) Studies on electrochemistry for Pathor Kuchi Leaf Power System, J. of Bangladesh J. Agric. And Envirin. 12(1): 37-42

111.Akter T, Bhuiyan MH, **Khan KA** and Khan MH(2017) Impact of photo electrode thickness and annealing temperature on natural dye sensitized solar cell. J. of Elsevier. Ms. Ref. No.: SETA-D-16-00324R2

112. K.A. Khan (2017) Performance evaluation of Vegetative and fruits Zn/Cu based electrochemical cell. Abstract published and Presented in the APS April meeting,January 28-31,2017, Session T1(Page No.: 200), Washington DC, USA. Bulletin of the American Physical Society, 62(1):

113. K.A. Khan (2017) Performance of electricity generation from Bryophyllum Leaf for Practical Utilization, Abstract published and Presented in the APS April meeting, January 28-31,2017, Session T1(Page No.: 201), Washington DC, USA. Bulletin of the American Physical Society. 62(1):

114. Mamun MA, Khan MI, **K.A. Khan,** Shajahan M(2017) A study on the Performance and electrochemistry of Bryophyllum Pinnutum Leaf (BPL) electrochemical cell. Abstract published and Presented in the APS April meeting, January 28-31,2017, Session T1(Page No.: 201), Washington DC, USA. Bulletin of the American Physical Society, 62(1):

115.Khan KA, Alam MS ,Rahman M, Mamun MA and Kamal MM(2017) Studies on energy efficiency for PKL (Pathor Kuchi Leaf) Power System. Bangladesh J. of Agriculture and Environment. Paper Code: BJAE/15/280

116.Khan KA, Hasan L and IIslam A(2017) Electricity Production from Vegetative and fruits. 4th Int: conference on Microelectronics, Circuits and Systems, June 3rd - 4th ,2017, Darjeeling, West Bengal, India.

117.Hasan M, **Khan KA** and Mamun MA(2017) An Estimation of the Extractable Electrical Energy from Bryophyllum pinnatum Leaf. American Int: J.of Research in Science, Technology, Engineering & Mathematics,ISSN (Print): 2328-3491, ISSN (Online): 2328-3580, ISSN (CD-ROM): 2328-3629

118.Hasan M, Hassan L, Haque S, Rahman M, **Khan KA**(2017) A study to analyze the self-discharge characteristics of Bryophyllum pinnatum leaf fueled bpl test cell. J.of IJRET, 6(8):

119.Asrafusjaman M, Akter T, Hasan M, Mamun MA and **Khan KA** (2017) A Comparative study on the Effect of Sodium Chloride as a Secondary Salt use in PKL(Scientific name- Bryophyllum pinnatum) and Lemon Juice for Electricity Generation. Thirty-Second Int: Conference on Solid Waste Technology and Management , Philadelphia, PA U.S.A

120.Ruhane TA, M. Islam MT, Rahaman MS, Bhuiyan MMH, IslamJMM , Newaz MK, **Khan KA**, Khan MA(2017) Photo current enhancement of natural dye sensitized solar cell by optimizing dye extraction and its loading period. J. of Elsevier Optik- Int: J. for Light and Electron Optics, Available online 6 September 2017

121. **Khan KA**, and Hossain MS(2017) Development of 1 KW PKL mini power plant for practical utilization at the off-grid region. National conference (2 days) on Science, Technology & Environment: Prospects and Limitations in the 21st Century(NCSTEPL-2017),Organised by Venue: (B.B Engg College, Assam) Bineswar Brahma Engineering College (A Govt of Assam Institution), Chandrapara, Kokrajhar-783370, Assam, (30 & 31 October)

122. Hasan M, Hassan L, Haque S, Rahman M, **Khan KA** (2017) A Study to Analyze the Self-Discharge Characteristics of Bryophyllum Pinnatum Leaf Fueled BPL Test Cell. Journal of IJRET, 6 (12): (with paper id 20170609104.)

123. Hasan M, Haque S, & **Khan KA** (2016) An Experimental Study on the Coulombic Efficiency of Bryophyllum pinnatum Leaf Generated BPL Cell. IJARIIE-ISSN(o)-2395-4396,2(1):

124. K.A. Khan; Rahman MS ; Das T; Ahmed MN; Saha KN; Paul S(2017) Investigation on parameters performance of Zn/Cu electrodes of PKL, AVL, Tomato and Lemon juice based electrochemical cells: A comparative study. Published in the Electrical Information and Communication Technology (EICT), 2017 3rd International Conference on IEEE Xplore: 01 February 2018, DOI: 10.1109/EICT.2017.8275150 Publisher: IEEE Conference Location: Khulna, Bangladesh.

125. **Hossain MA, K.A**. Khan, Quayum ME(2017) Performance development of bio-voltaic cell from arum leaf extract electrolytes using zn/cu electrodes and investigation of their electrochemical performance. Int:l J. of Advances in Science Engineering and Technology, ISSN: 2321-9009, 5(4):, Spl. Issue-1 Nov.-2017.

126.Hassan SJ & **Khan KA** (2007) Determination of Optimum Tilt angles of Photovoltaic panels in Dhaka, Bangladesh. Int: J. Eng. Trach 4 (3): 139-142

127**. K.A. Khan**, Rahman MS,Das T,Saha KN and Mamun MA(2018) Investigate the Cell efficiency Of PKL Cell. Published in the Int: Conference on Electrical, Electronics, Computers, Communication, Mechanical and Computing (EECCMC) 28th & 29th January 2018 Priyadarshini Engineering College, Chettiyappanur, Vaniyambadi - 635751, Vellore District, Tamil Nadu, India.Paper Code: 01-2018-1158

128. K.A. Khan and A K M Obaydullah AKM (2018) Construction and Commercial Use of PKL Cell. Published in the IJARIIE-ISSN(O)-2395-4396, 4(2):3563-3570

129. K.A. Khan, Obaydullah AKM, Wadud MA and Hossain MA (2018)Bi-Product from Bioelectricity. IJARIIE-ISSN(O)-2395-4396, 4(2): 3136-3142

130. **Khan KA**, Wadud MA, Hossain MA and Obaydullah AKM (2018) Electrical Performance of PKL (Pathor Kuchi Leaf) Power. IJARIIE-ISSN(O)-2395-4396, 4(2):3470-3478

131. **Khan KA**, Hossain MA, Obaydullah AKM and Wadud MA(2018) PKL Electrochemical Cell and the Peukert's Law. IJARIIE-ISSN(O)-2395-4396, 4(2):4219-4227

132. Khan KA, Ali MH, Mamun MA, Haque MM, Ullah AKMA, Dr. Mohammed Nazrul Islam Khan DMNI,Hassan L, Obaydullah AKM, Wadud MA(2018) Bioelectrical Characteristics of Zn/Cu- PKL Cell and Production of Nanoparticles (NPs) for Practical Utilization. 5th Int: conf. on ‘Microelectronics, Circuits and Systems’, Micro2018, 19th and 20th May,2018,Venue: Bhubaneswar, Odisha, India, Organizer: Applied Computer Technology, Kolkata, West Bengal, India, Page: 59-66, www.actsoft.org, ISBN: 81-85824-46-1, In Association with: International Association of Science,Technology and Management.

133. Hassan MM, Arif M and **Khan KA** (2018) Modification of Germination and growth patterns of Basella alba seed by low pressure plasma. Journal of Modern Physics, 5(3), pp:17-18

134. Khan KA, Manir SMM, Islam MS, Jahan S, Hassan L, and Ali MH(2018) Studies on Nonconventional Energy Sources for Electricity Generation.Int: J. Of Advance Research And Innovative Ideas In Education.4(4): 229-244

135. Khan KA, Hasan M, Islam MA, Alim MA, Asma U, Hassan L, and Ali MH (2018) A Study on Conventional Energy Sources for Power Production. Int: J. Of Advance Research And Innovative Ideas In Education. 4 (4) : 229-244

136. Khan KA, Rahman MS, Paul S(2017)I nvestigation on parameters performance of Zn/Cu electrodes of PKL, AVL, Tomato and Lemon juice based electrochemical cells: A comparative study. Publication Year: 2017, Page(s):1-6, Published in: 2017 3rd International Conference on Electrical Information and Communication Technology (EICT), Date of Conference: 7-9 Dec. 2017, Date Added to IEEE Xplore: 01 February 2018,ISBN Information:INSPEC Accession Number: 17542905, DOI: 10.1109/EICT.2017.8275150,Publisher: IEEE, Conference Location: Khulna, Bangladesh 2018

137. K.A. Khan (2018) An Experimental Observation of a PKL Electrochemical Cell from the Power Production View Point. Presented as an Invited speaker and Abstract Published in the Conference on Weather Forecasting & Advances in Physics, Department of Physics, Khulna University of Engineering and Technology (KUET), Khulna, Bangladesh. 2018

138. Guha P, Islam F and **Khan KA**(2018) Studies on Redox Equilibrium and Electrode Potentials.IJARIIE-ISSN(O)-2395-4396, 4(4):1092-1102, 2018

139. Islam F, Guha P and **Khan KA**(2018) Studies on pH of the PKL Extract during Electricity Generation for day and night time collected Pathor Kuchi Leaf,IJARIIE-ISSN(O)-2395-4396, 4(4):1103 -1113

140. Hassan SJ & **Khan KA** (2007) Design, Fabrication and performance study of Bucket type solar candle machine. Int: J. Eng. Trach 4 (3):

141. MAH Khan & **K.A. Khan** (2005) Selective Black - Nickel coating for use in linear Fresnel Reflecting concentrating collector. Nuclear science and Applications. 14(11) :

142. Khan KA, Rahman ML, Islam MSI, Latif MA, Hossain MA, Saime MA and Ali MH (2018) Renewable Energy Scenario in Bangladesh. J. of IJARII, 4(5) : 270-279, ISSN(O)-2395-4396.

143. **Khan KA** and Rasel SR (2018) Prospects of Renewable Energy with Respect to Energy Reserve in Bangladesh Published in the journal of IJARII. ISSN(O)-2395-4396. 4(5):280-289

144. Khan KA, Hossain MS, Kamal MM, Rahman MA and Miah I (2018) Pathor Kuchi Leaf : Importance in Power Production. IJARIIE-ISSN(O)-2395-4396 , 4(5):

145. Khan KA, Ali MH, Mamun MA, Ibrahim M, Obaidullah AKM, M. Hossain A and Shahjahan M(2018) PKL Electricity in Mobile Technology at the off-grid region.Published in the proceedings of CCSN-2018, 27-28 October, 2018 at Kolkata, India.

146. Khan KA and Hossain A (2018) Off-grid 1 KW PKL Power Technology: Design, Fabrication, Installation and Operation Published in the proceedings of CCSN-2018, 27-28 October, 2018 at Kolkata, India.

147.Khan KA, Mamun MA, Ibrahim M, Hasan M, Ohiduzzaman M, Obaidullah AKM, Wadud MA and Shajahan M (2018) PKL electrochemical cell for off-grid Areas: Physics, Chemistry and Technology Published in the proceedings of CCSN-2018, 27-28 October, 2018 at Kolkata, India.2018

148. Khan KA, and Rasel SR (2018) Studies on Wave and Tidal Power Extraction Devices. Int: J. Of Advance Research And Innovative Ideas In Education. 4(6):61-70

149. Khan KA, Ahmed SM, Akhter M, Hossen MRAM (2018) Wave and Tidal Power Generation.Int: J. Of Advance Research And Innovative Ideas In Education. 4(6):71-82

150. Khan KA, Rahman MA, Islam MN, Akter M, and Islam MS(2018) Wave Climate Study for Ocean Power Extraction. Int: J. Of Advance Research And Innovative Ideas In Education.4(6):83-93

151. Khan KA, Miah MS, Ali MI, Sharma KS, and Quader A(2018) Studies on Wave and Tidal Power Converters for Power Production. Int: J. Of Advance Research And Innovative Ideas In Education. 4(6):94-105

152. Khan KA, Ali MH, Obaydullah AKM, Wadud MA(2018) Candle Production Using Solar Thermal Systems.1st Int: Conference on ‘Energy Systems, Drives and Automations’, ESDA2018, Page: 55-66.

153. Khan KA, Rasel SR and Ohiduzzaman M(2018) Homemade PKL Electricity Generation for Use in DC Fan at Remote Areas.1st Int: Conference on ‘Energy Systems, Drives and Automations’, ESDA2018, Page: 90-99.

154. Khan KA and Yesmin F (2019) PKL Electricity- A Step forward in Clean Energy. Int:J. Of Advance Research and Innovative Ideas In Education. 5 (1): 316-325

155. Khan KA and Yesmin F(2019) Cultivation of Electricity from Living PKL Tree’s Leaf. Int: J. Of Advance Research And Innovative Ideas In Education. 5 (1):462-472

156. Khan KA and Yesmin F(2019) Solar Water Pump for Vegetable field under the Climatic Condition in Bangladesh. Int: J. Of Advance Research And Innovative Ideas In Education. 5 (1):631-641
157. Khan KA, Rasel SR and Ohiduzzaman M(2019) Homemade PKL Electricity Generation for Use in DC Fan at Remote Areas.Accepted and is going to be published in Microsystem Technologies, Springer, MITE-D-19-00131, 158 February, 2019.
159. Khan KA, Ali MH, Obaydullah AKM, Wadud MA (2019) Production of Candle Using Solar Thermal Technology. Accepted and is going to be published in Microsystem Technologies, Springer, MITE-D-1900119-, 04 March, 2019.
160. Khan KA , and Rasel SR(2019) Solar Photovoltaic Electricity for Irrigation under Bangladeshi Climate. Int: J. Of Advance Research And Innovative Ideas in ducation. 5 (2): 28-36
161. Khan KA and Rasel SR(2019) The Present Scenario of Nanoparticles in the world. Int: J. Of Advance Research And Innovative Ideas In Education. 5 (2):462-471
162. Khan KA, Yesmin F, Wadud MA and Obaydullah AKM (2019) Performance of PKL Electricity for Use in Television. Int: Conference on Recent Trends in Electronics & Computer Scienc-2019, Venue: NIT Silchar, Assam, India. Conference date: 18th and 19th of March, 2019. Organizer: Department of Electronics and Engineering, NIT Silchar, Assam, India. Page: 69
163. Mamun MA, Ibrahim M and Shahjahan M and **Khan KA** (2019) Electrochemistry of the PKL Electricity.Int: Conference on Recent Trends in Electronics & Computer Scienc-2019, Venue: NIT Silchar, Assam, India, Conference dates: 18th and 19th of March, 2019. Organizer: Department of Electronics and Engineering, NIT Silchar, Assam, India. Page: 71
164. Khan K.A., Hossain MA , Kabir MA, Rahman MA and Lipe P(2019) A Study on Performance of Ideal and Non-ideal Solar Cells under the Climatic Situation of Bangladesh. Int:J. Of Advance Research And Innovative Ideas in Education.5(2): 975-984
165. Khan KA (1999) Copper oxide coatings for use in a linear solar Fresnel reflecting concentrating collector, Publication date 1999/8/1, J. Renewable energy,17(4) :603-608. Publisher - Pergamon, 1999
166. Ohiduzzaman M, **Khan KA**,Yesmin F and Salek MA (2019) Studies on Fabrication and Performance of Solar Modules for practical utilization in Bangladeshi Climate. IJARIIE, 5(2): 2626-2637
167. K.A.Khan and Salman Rahman Rasel (2019) A study on electronic and ionic conductor for a PKL electrochemical cell, IJARIIE, 5(2): 3100-3110.
168. M Ohiduzzaman, R Khatun, S Reza, **K A Khan**, S Akter, M F Uddin, M M Ahasan (2019) Study of Exposure Rates from various Nuclear Medicine Scan at INMAS, Dhaka. IJARIIE, 5(3): 208-218
168. K.A.Khan and Salman Rahman Rasel(2019) Development of a new theory for PKL electricity using Zn/Cu electrodes: per pair per volt, IJARIIE, 5(3):1243-1253
169. K.A. Khan & M. Abu Salek(2019) A Study on Research, Development and Demonstration Of Renewable Energy Technologies, IJARIIE, 5(4):113-125
170. K.A. Khan, Mohammad Nazim Uddin, Md. Nazrul Islam, Nuruzzaman Mondol & Md.Ferdous(2019) A Study on Some Other Likely Renewable Sources for Developing Countries, IJARIIE, 5(4):126-134
171. Hasan,M.& **Khan, K.A.** (2019) Experimental characterization and identification of cell parametersin a BPLelectrochemicaldevice.SNAppl.Sci.,1:1008.https://doi.org/10.1007/s42452-019-1045-8
172. K.A. Khan & S.M. Zian Reza(2019) The Situation of Renewable Energy Policy and Planning in Developing Countries, IJARIIE, 5(4):557-565
173. K.A. Khan & M. Abu Salek (2019) Solar Photovoltaic (SPV) Conversion: A Brief Study, IJARIIE, 5(5):187-204
174. K.A.Khan, Nusrat Zerin , S.M.Noman Chy.,M.Nurul Islam, Ruchi Bhattacharjee(2019) A study on voltage harvesting from PKL living plant, IJARIIE, 5(5): 407-415
175. K.A. Khan, M.A. Mamun, M. Ibrahim, M. Hasan, M.Ohiduzzaman, A.K.M. Obaydullah, M.A.Wadud, M. Shajahan(2019),PKL electrochemical cell: physics and chemistry,SN Applied Sciences(2019)1:1335,https://doi.org/10.1007/s42452-019-1363-x
176. M. N. F.Rab, **K. A. Khan**, Salman Rahman Rasel, M Ohiduzzaman, Farhana Yesmin, Lovelu Hassan ,M. Abu Salek , S.M.Zian Reza and M.Hazrat Ali(2019) Voltage cultivation from fresh leaves of air plant, climbing spinach, mint, spinach and Indian pennywort for practical utilization, 8 th international conference on CCSN2019, Vol-1, October, 19th-20th, 2019, Institute of Aeronautical Engineering, Hyderabad, India.
177. M. Hazrat Ali, Unesco Chakma, Debashis Howlader, M.Tawhidul Islam and **K.A.Khan** (2019) Studies on Performance Para meters of a Practical Transformer for Various Utilizations , 8 th international conference on CCSN2019, Vol-1, October, 19th-20th, 2019, Institute of Aeronautical Engineering, Hyderabad, India.
178. K.A.Khan, Md. Shahariar Rahman, Ali Akter , Md. Shahidul Hoque, Md. Jahangir Khan, Eiskandar Mirja, Md. Nasiruddin Howlader, Mohammed Solaiman(2019) A study on the effect of embedded surface area of the electrodes for voltage collection from living PKL tree, 5(6) , IJARIIE-ISSN(O)-2395-4396
179. K.A.Khan and S.M.Zian Reza(2019) A Study on Maximum Power Harvesting Potential from living PKL tree - Future Energy Resource for the Globe, 5(6), PP:893-903, IJARIIE-ISSN(O)-2395-4396

180. M.Hazrat Ali, Unesco Chakma,Debashis Howlader, M. Tawhidul Islam and **K.A.Khan**(2019) Studies on Performance Parametersof a Practical Transformer for Various Utilizations, Microsystem Technologies, Springer, Accepted:03 Dec 2019, DOI: 10.1007/s00542-019-04711-w

181. K.A.Khan(2019) Impact of Electrode Surface for Voltage Cultivation from Living PKL Tree, International Journal of Nanotechnology in Medicine & Engineering, 4(5), November 2019

182. K.A.Khan and M. Abu Salek(2019),Future Trends in Vegetative and Fruits Energy- A New Renewable Energy Source for Future Electricity,IJARIIE,5(6), pp:1144-1160

183. K.A.Khan, Alamgir Kabir, Anowar Hossain, Nazmul Alam, Abhijeet Kumar Kundu, Ali Akter (2019) A comparative Study between Lead Acid and PKL Battery, IJARIIE,5(6), pp:1439-1454

184. M. K. A. Khan, A. Rahman, S. Paul, M. S. Rahman, M. T. Ahad and M. Al Mamun (2019), "An Investigation of Cell Efficiency of Pathor Kuchi Leaf (PKL) Cell for Electricity Generation," 2019 International Symposium on Advanced Electrical and Communication Technologies (ISAECT), Rome, Italy, 2019, pp. 1-6.

185. Dr. A K M Obaydullah, **Dr. K.A. Khan** (2020) Perception of head teachers of primary schools about quality primary science teaching-learning (TL) practice in Bangladesh, SPC Journal of EDucation, Science Publishing Corporation Publisher of International Academic Journals, DOI: 10.14419/je.v3i1.30593,Vol(3),No(1),Pages:18-21.

186. K. A. Khan, Md. Alamgir Kabir , Mustafa Mamun, Md. Anowar Hossain, Samiul Alim(2020),An Observation of Solar Photovoltaic Electricity across the globe, IJARIIE,6(4), pp:1487-504, ISSN(O)-2395-4396

187. K.A.Khan (2020) PKL Electrochemical Cell -A New and Innovative Clean Energy Production System, Hendun Research Access, NTNS, 3(1), pp: 73-78

188. K.A.Khan, M Shaiful Islam, M.N. Islam Khan, Atique Ullah, Shahinul Islam, S. R. Rasel (2020), Zinc Oxide Nanoparticles Production Using *Catharanthus Roseus* Leaf Extract and their Characterization for Practical Utilization, Proceeding of 7th International Conference on Microelectronics, Circuits & Systems,MICRO-2020, 25th and 26th of July, 2020.Venue: Online Conference, In Collaboration with: Delhi Technological University, Delhi, India.

189. K.A.Khan, M Shaiful Islam, Md. Abdul Awal, M.N. Islam Khan, Atique Ullah(2020), Studies on Performances of Copper Oxide Nanoparticles from *Catharanthus Roseus* Leaf Extract, Proceeding of 7th International Conference on Microelectronics, Circuits & Systems,MICRO-2020, 25th and 26th of July, 2020.Venue: Online Conference, In Collaboration with: Delhi Technological University, Delhi, India.

192. Salman Rahman Rasel and **K. A. Khan** (2020), A Study on Electrochemical Cell based on soil and living PKL tree, Proceeding of 7th International Conference on Microelectronics, Circuits & Systems,MICRO-2020, 25th and 26th of July, 2020.Venue: Online Conference, In Collaboration with: Delhi Technological University, Delhi, India.

193. Lovelu Hassan & **K. A. Khan** (2020), Applications of PKL electricity for use in DC instruments, Proceeding of 7th International Conference on Microelectronics, Circuits & Systems,MICRO-2020, 25th and 26th of July, 2020.Venue: Online Conference, In Collaboration with: Delhi Technological University, Delhi, India.

194. K.A. Khan and Md. Abdul Awal (2020), A study on connection between chemistry and electricity, IJARIIE-ISSN(O)-2395-4396, Vol-6 Issue-5 2020.

177. K.A.Khan, M.A.Mamun and Sharif Mia(2020), Electrochemical conversion of CO_2 into useful chemicals and PKL electricity, Abstract Published, Proceedings of 9th International Conference on Computing, Communication and Sensor Networks 17th and 18th of October, Organizer: Applied Computer Technology Kolkata, West Bengal, India. www.actsoft.org In Association with: International Association of Science, Technology and Management,Page-19,Venue: Online conference.

195. K.A.Khan and Shahinul Islam(2020), 3R economy of the PKL electrochemical cell, Abstract Published, Proceedings of 9th International Conference on Computing, Communication and Sensor Networks 17th and 18th of October, Organizer: Applied Computer Technology Kolkata, West Bengal, India. www.actsoft.org In Association with: International Association of Science, Technology and Management, Page-26 , Venue: Online conference.

196. **K.A. Khan**, and Md. Abdul Awal. "A Study on Graphite, Graphene, Graphene Oxide (GO) and Reduced Graphene Oxide (rGO) for Practical Utilization" Internation Journal Of Advance Research And Innovative Ideas In Education Volume 6 Issue 6 2020 Page 422-434

197. K.A. Khan, Syful islam , and Md. Abdul Awal(2020) "A historical review on silver nanoparticles (AgNPs) synthesis for different leaf, vegetative and plant extracts" Internation Journal Of Advance Research And Innovative Ideas In Education Volume 6 Issue 6 2020 Page 705-724

198. K.A. Khan , Shahinul Islam, S. R. Rasel, M. A.Saime, Sazzad Hossain, Md. Atiqur Rahman (2020) Erformance Evaluation Of Pkl (Pathor Kuchi Leaf) Electricity For Use In Television And Radio, Information Management and Computer Science (IMCS) 3(2) (2020) 30-37, *DOI: http://doi.org/10.26480/imcs.02.2020.30.37*

199. K.A. Khan, Samiul Alim, Md Khairul Islam, and Sayed Bony Amin. "Living PKL Plants - An Innovative Idea for PKL back up LED lamp along the Coastal Belts of Bangladesh" ,Internation Journal Of Advance Research And Innovative Ideas In Education Volume 7 Issue 2 2021 Page 112-127

200. K.A. Khan, Shahinul Islam, M. A. Saime, S. R. Rasel, Sazzad Hossain(2021) A NEW AND SUSTAINABLE PKL ELECTRICITY, Topics in Intelligent Computing and Industry Design (ICID) 2(2) (2020) 173-178, DOI: http://doi.org/10.26480/etit.02.2020.173.178

201. Md. Ohiduzzamana, Rajia Sultanab, Rajada Khatunc, Shirin Akterc and **K.A.Khan**(2021) PORTABLE PKL POWERED LANTERN, Topics in Intelligent Computing and Industry Design (ICID) 2(2) (2020) 179-183, DOI: http://doi.org/10.26480/etit.02.2020.179.183

202. K.A. Khan, Md. Robiul Islam, Md. Anowar Hossain , and Md. Sayed Hossain. "PKL electricity- A new idea on Zn/Cu based electrochemical cell" Internation Journal Of Advance Research And Innovative Ideas In Education Volume 7 Issue 2 2021 Page 641-655

203. K.A. Khan, Md. Anowar Hossain, Md. Robiul Islam , and Md. Abdul Mannan. "A study on Zn/C based Pathor Kuchi Leaf (PKL) electrochemical cell" Internation Journal Of Advance Research And Innovative Ideas In Education Volume 7 Issue 2 2021 Page 975-990

204. K.A Khan,Md. Sayed Hossain,Salman Rahman Rasel, Shahinul Islam,M.Hazrat Ali(2021) A study on Zn/Cu based pandan leaf (Pandanus amaryllifolius)electrochemical cell, 8 th international conference on Micro2021, Microelectronics, Circuits and Systems, May 08th and 09th 2021, Page 15, Venue: Online conference.

205. K.A.Khan, Farhana Islam, Md. Sayed Hossain, Salman Rahman Rasel (2021), Studies on synthesis, characterization and monitoring of Ag NPs for power production using tomato, 8 th international conference on Micro2021, Microelectronics, Circuits and Systems, May 08th and 09th 2021, Page 18, Venue: Online conference.

206. K.A.Khan, Farhana Islam, Md. Sayed Hossain, Salman Rahman Rasel (2021) A Study on Electricity Generation from Red Spinach, 8 th international conference on Micro2021, Microelectronics, Circuits and Systems, May 08th and 09th 2021, Page 22, Venue: Online conference.

207. K.A.Khan, Mohammad Tofazzal Haider,Md. Sayed Hossain, Salman Rahman Rasel (2021) Synthesis, Characterizations of Silver Nanoparticles (Ag NPs) and monitoring for power production using Drum Stick Leaves, 8 th international conference on Micro2021, Microelectronics, Circuits and Systems, May 08th and 09th 2021,Page 31, Venue: Online conference.

208. K.A.Khan, Shahinul Islam, Md. Sayed Hossain, Salman Rahman Rasel (2021) Extract of Green Chili: A new source of electricity, 8 th international conference on Micro2021, Microelectronics, Circuits and Systems, May 08th and 09th 2021,Page 35, Venue: Online conference.

209. K.A. Khan, Md. Anowar Hossain, Md. Abdul Mannan, and Md. Robiul Islam. "PKL electrochemical cell and battery-The influence of equilibrium constant" Internation Journal Of Advance Research And Innovative Ideas In Education Volume 7 Issue 3 2021 Page 2446-2491

210. K.A. Khan, Md. Khairul Islam, Md. Alamgir Kabir, Sayed Bony Amin, Sazzad Hossain, and Md. Shahidul Islam . "A study on variation of product ion and reactant ion during PKL electricity generation" Internation Journal Of Advance Research And Innovative Ideas In Education Volume 7 Issue 4 2021 Page 579-597

211. K.A. Khan, Md. Alamgir Kabir, Mustafa Mamun, Sazzad Hossain, and Md. Shahidul Islam. "PKL electricity - The Role of Physics" Internation Journal Of Advance Research And Innovative Ideas In Education Volume 7 Issue 4 2021 Page 1583-1606

212. K.A. Khan, Md. Khairul Islam, Sayed Bony Amin, and Khandaker Kabir Hossain. "Leaf and vegetative extract electrochemical cells - In comparative research for capacity study" Internation Journal Of Advance Research And Innovative Ideas In Education Volume 7 Issue 4 2021 Page 2336-2353

213. K.A. Khan, Md. Khairul Islam, Sayed Bony Amin, and Md. Abdur Rahim. "Prospects of PKL Electricity" Internation Journal Of Advance Research And Innovative Ideas In Education Volume 7 Issue 5 2021 Page 563-582

214. K.A. Khan, Md. Alamgir Kabir, Mustafa Mamun, Mst. Sakera Khatun, and Muhammad Saiful Islam Akhand. "Effect of pH of the PKL extract during electricity production" Internation Journal Of Advance Research And Innovative Ideas In Education Volume 7 Issue 5 2021 Page 583-600

215. K.A. Khan, Khairul Islam, Sayed Bony Amin, and Khandaker Kabir Hossain. "A study on current density for PKL electrochemical cell" Internation Journal Of Advance Research And Innovative Ideas In Education" Volume 7 Issue 6 2021 Page 9-24

216. Motiur Rahman , M Shamsuzzaman, Manoshi Sarker , Abdul Jobber , Mohsin Mia , Asish Kumar Bairagi , Musfika Ahmed , Shohel Reza , Sadiq R Malik , MMH Bhuiyan , ASM Habibullah Khan and **MKA Khan** (2021), Dosimetric characterization of medical linear accelerator Photon and Electron beams for the treatment accuracy of cancer patients, World Journal of Advanced Engineering Technology and Sciences, 2021, 03(01),041–059,Publication history: Received on 04 May 2021; revised on 11 August 2021; accepted on 13 August 2021,Article DOI: https://doi.org/10.30574/wjaets.2021.3.1.0046

217. K.A. Khan, Akhtar-Uz-Zaman Shabuj, Md. Khairul Islam, Sayed Bony Amin, & Md. Abdur Rahim. (2021). AgNPs for Power Production. Internation Journal Of Advance Research And Innovative Ideas In Education, 7(6), 323-338.

218. K.A. Khan, & Md. Akhtar-Uz-Zaman Shabuj (2021). A study on quantum dot NPs for drug delivery. *Internation Journal Of Advance Research And Innovative Ideas In Education*, 7(6), 622-637.

219. K.A. Khan, khairulislam, Sayed Bony Amin, & Akhtar-Uz-Zaman Shabuj. (2021). A Brief Study on Nanofluid. Internation Journal Of Advance Research And Innovative Ideas In Education, 7(6), 1151-1165.

220. Md Rabiul Alam & **K.A. Khan** (2021). Development of Antigravity Device (Ion Propulsion Method) using Artificial Intelligence. Internation Journal Of Advance Research And Innovative Ideas In Education, 7(6), 1128-1150.

221. K.A. Khan, Md. Alamgir Kabir, Mustafa Mamun, Mohammad Asaduzzaman, and Rimon Siddiqua(2022) "A Study on femtosecond laser interaction with natural dyes" Internation Journal Of Advance Research And Innovative Ideas In Education Volume 8 Issue 1 Page 98-112

222. K.A. Khan, Md. Alamgir Kabir, Mustafa Mamun, Mst. Sakera Khatun, & Muhammad Saiful Islam Akhand. (2022). A Study on ZnO Nanoparticles. *Internation Journal Of Advance Research And Innovative Ideas In Education*, 8(1), 141-158.

223. Rahman MM, Shamsuzzaman M, Bhuiyan MMH,**K.A. Khan**, et al. Development of spreadsheet for rapid assessment of therapeutic radiation dose delivery with electron and photon beams at various energies. J Cancer Prev Curr Res. 2022;13(1):8–12. DOI: 10.15406/jcpcr.2022.13.00479

224.**K.A. Khan**, Md. Khairul Islam, Sayed Bony Amin, & Bidhan Chandra Sutradhar. (2022). A Study on Ferrite Nanoparticles (FNPs). *Internation Journal Of Advance Research And Innovative Ideas In Education*, 8(1), 972-989.

225.K.A. Khan, Mohammed Asraf Uddin, Md. Khairul Islam, & Bidhan Chandra Sutradhar. (2022). A Study on Spectator Ions. *Internation Journal Of Advance Research And Innovative Ideas In Education*, 8(1), 1342-1358.

226. **K.A. Khan**, Md.Abdur Rahim, Mohammad Habibur Rahman, & Md. Akramuzzaman. (2022). A study on greenhouse gas. *Internation Journal Of Advance Research And Innovative Ideas In Education*, 8(1), 1359-1375.

227. KA Khan., *et al* (2021). "Green Synthesis of Zinc Oxide Nanoparticles Using *Catharanthus Roseus* Leaf Extract and their Characterization". *Acta Scientific Agriculture* 6.4 (2021)

228. **Khan K.A.**, Bhuyan MS., Mamun M A., Ibrahim M., Hasan L., Wadud M.A.(2018), Organic Electricity from Zn/Cu-PKL Electrochemical Cell, In: Contemporary Advances in Innovative and Applicable Information Technology, Advances in Intelligent Systems and Computing, J. K. Mandal et al. (eds.), © Springer Nature Singapore Pvt. Ltd., 2018, Vol. 812, Chapter 9, p 75-90.

229. **Kamrul Alam Khan**, Salman Rahman Rasel, S.M. Zian Reza and Farhana Yesmin (March 25th 2020). Energy Efficiency and Sustainability in Outdoor Lighting - A Bet for the Future, Energy Efficiency and Sustainable Lighting - a Bet for the Future, Manuel Jesús Hermoso-Orzáez and Alfonso Gago-Calderón, IntechOpen, DOI: 10.5772/intechopen.89413.

230. **K.A.Khan**, Farhana Yesmin, Md. Abdul Wadud and A K M Obaydullah (2019), "Performance of PKL Electricity for Use in Television", accepted as a book chapter NAROSA publisher, September 2019.

231. M. N. F.Rab, **K. A. Khan**, Salman Rahman Rasel, M.Hazrat Ali, Lovelu Hassan , M. Abu Salek , S.M.Zian Reza and M Ohiduzzaman(2020) "Voltage Cultivation from Fresh Leaves of Air Plant, Climbing Spinach, Mint, Spinach and Indian Pennywort for Practical Utilization", Energy Systems, Drives andAutomations, Springer Singapore, Lecture Notes in Electrical Engineering, eBook ISBN: 978-981-15-5089-8, DOI: 10.1007/978-981-15-5089-8, Hardcover ISBN: 978-981-15-5088-1, Series ISSN: 1876-1100, Volume: 664,Page: 150-160.

232. **K. A. Khan**, Salman Rahman Rasel, S.M.Zian Reza**,** M. A. Saime, Nazmul Alam, Abu Salek , MehediHasan (2020) "Solar Medical Sterilizer using Pressure Cooker for Rural off-grid Areas", Energy Systems, Drives andAutomations, Springer Singapore, Lecture Notes in Electrical Engineering, eBook ISBN: 978-981-15-5089-8, DOI: 10.1007/978-981-15-5089-8, Hardcover ISBN: 978-981-15-5088-1, Series ISSN: 1876-1100, Volume: 664,Page: 258-269.

233. **K. A. Khan**, M. A. Saime, M.Hazrat Ali, S. M. Zian Reza, Nazmul Alam**,** Md. Afzol Hossain, M. N.F.Rab and Shahinul Islam (2020) "A study on PKL electrochemical cell for three different conditions ", Energy Systems, Drives andAutomations, Proceedings of ESDA 2019 , Springer Singapore, Lecture Notes in Electrical Engineering, eBook ISBN: 978-981-15-5089-8, DOI: 10.1007/978-981-15-5089-8, Hardcover ISBN: 978-981-15-5088-1, Series ISSN: 1876-1100, Volume: 664, Page: 374-386.

234. **Khan K.** et al. (2020) A Study on Development of PKL Power. In: Mandal J.K., Mukherjee I., Bakshi S., Chatterji S., Sa P.K. (eds) Computational Intelligence and Machine Learning. Advances in Intelligent Systems and Computing, vol 1276. Pp151-171,Springer, Singapore. http://doi-org-443.webvpn.fjmu.edu.cn/10.1007/978-981-15-8610-1_17

235. Pervin R., **Khan K.A.,** Khan N.I., Atique Ullah A.K.M., Zian Reza S.M. (2021) Green Synthesis of Magnetite (Fe3O4) Nanoparticles Using Azadirachta indica Leaf Extract and Their Characterization. In: Mukherjee M., Mandal J., Bhattacharyya S., Huck C., Biswas S. (eds) Advances in Medical Physics and Healthcare Engineering. Lecture Notes in Bioengineering. Springer, Singapore. https://doi.org/10.1007/978-981-33-6915-3_9, First Online17 June 2021, DOIhttps://doi.org/10.1007/978-981-33-6915-3_9, Publisher NameSpringer, Singapore. Page: 81-90

236. **Khan K.A.**, Sultana R., Islam S., Zian Reza S.M. (2021) A Study on Light Traps for Attracting and Killing the Insects Using PKL Electricity. In: Mukherjee M., Mandal J., Bhattacharyya S., Huck C., Biswas S. (eds) Advances in Medical Physics and Healthcare Engineering. Lecture Notes in Bioengineering. Springer, Singapore. https://doi.org/10.1007/978-981-33-6915-3_14, First Online17 June 2021, DOIhttps://doi.org/10.1007/978-981-33-6915-3_14,Publisher NameSpringer, Singapore.pp:135-143

237. Hossain M.A. et al. (2021) PKL Electricity-An Observations. In: Mukherjee M., Mandal J., Bhattacharyya S., Huck C., Biswas S. (eds) Advances in Medical Physics and Healthcare Engineering. Lecture Notes in Bioengineering. Springer, Singapore. https://doi.org/10.1007/978-981-33-6915-3_53, First Online17 June 2021, DOIhttps://doi.org/10.1007/978-981-33-6915-3_53, Publisher NameSpringer, Singapore.pp: 555-566

238. **Khan K.A.**, Rahman M.S., Rahman M.N., Khan S.A., Juel M.I., Nirjhar M.I. (2021) A Study on Electrochemical Characterizations of Bryophyllum pinnatum Leaf Electricity. In: Mukherjee M., Mandal J., Bhattacharyya S., Huck C., Biswas S. (eds) Advances in Medical Physics and Healthcare Engineering. Lecture Notes in Bioengineering. Springer, Singapore. https://doi.org/10.1007/978-981-33-6915-3_54 , First Online17 June 2021, DOIhttps://doi.org/10.1007/978-981-33-6915-3_54, Publisher NameSpringer, Singapore. pp 567-581

239. Hassan L., **Khan K.A.** (2021) Applications of PKL Electricity for Use in DC Instruments. In: Biswas A., Saxena R., De D. (eds) Microelectronics, Circuits and Systems. Lecture Notes in Electrical Engineering, vol 755. Springer, Singapore. https://doi.org/10.1007/978-981-16-1570-2_18, pp:191-202

240. Khan K.A., Shaiful Islam M.,Awal A., Khan M.N.I., Ullah A.K.M.A. (2021) Studies on Performances of Copper Oxide Nanoparticles from Catharanthus Roseus Leaf Extract. In: Biswas A., Saxena R., De D. (eds) Microelectronics, Circuits and Systems. Lecture Notes in Electrical Engineering, vol 755. Springer, Singapore. https://doi.org/10.1007/978-981-16-1570-2_17,pp:179-190

241. Khan K.A., Islam S., Delowar Hossain Munna M., Zian Reza S.M., Hazrat Ali M., Yesmin F. (2022) 3R Economy of a PKL Electrochemical Cell. In: Chanda C.K., Szymanski J.R., Sikander A., Mondal P.K., Acharjee D. (eds) Advanced Energy and Control Systems. Lecture Notes in Electrical Engineering, vol 820. Springer, pp:137-145, Singapore. https://doi.org/10.1007/978-981-16-7274-3_11

242. Khan K.A., Islam S., Rasel S.R., Saime M.A., Islam S., Ali M.H. (2022) PKL Backup LED Bulb-An Alternative Source of Electricity During Load Shading. In: Chanda C.K., Szymanski J.R., Sikander A., Mondal P.K., Acharjee D. (eds) Advanced Energy and Control Systems. Lecture Notes in Electrical Engineering,vol.820.pp:89-99,Springer,Singapore. https://doi.org/10.1007/978-981-16-7274-3_7

243. Khan K.A., Mamun M.A., Adal M.I., Mia S., Ali M.H. (2022) Electrochemical Conversion of CO2 into Useful Chemicals and PKL Electricity. In: Chanda C.K., Szymanski J.R., Sikander A., Mondal P.K., Acharjee D. (eds) Advanced Energy and Control Systems. Lecture Notes in Electrical Engineering, vol 820. Springer,pp:55-72, Singapore. https://doi.org/10.1007/978-981-16-7274-3_5

244. Abdul Wadud, M., Khan, K.A., Sayed Hossain, M., Rasel, S.R., Bhattacharyya, S. (2022). An Observation of Energy Density for PKL, Aloe Vera, Myrobalan, Lemon, and Tomato Electrochemical Cell. In: Mandal, J.K., Hsiung, PA., Sankar Dhar, R. (eds) Topical Drifts in Intelligent Computing. ICCTA 2021. Lecture Notes in Networks and Systems, vol 426. Springer, Singapore. https://doi.org/10.1007/978-981-19-0745-6_60

245. Khan, K.A., Sayed Hossain, M., Rasel, S.R., Bhattacharyya, S. (2022). Comparative Studies of VL, IL, and PL from Different Vegetative and Fruits Electrochemical Cells . In: Mandal, J.K., Hsiung, PA., Sankar Dhar, R. (eds) Topical Drifts in Intelligent Computing. ICCTA 2021. Lecture Notes in Networks and Systems, vol 426. Springer, Singapore. https://doi.org/10.1007/978-981-19-0745-6_56

246. Khan, K.A., Shaiful Islam, M., Islam Khan, M.N., Bhattacharyya, S. (2022). Synthesis and Characterization of Zinc Oxide Nanoparticles Using Catharanthus Roseus Leaf Extract. In: Mandal, J.K., Hsiung, PA., Sankar Dhar, R. (eds) Topical Drifts in Intelligent Computing. ICCTA 2021. Lecture Notes in Networks and Systems, vol 426. Springer, Singapore. https://doi.org/10.1007/978-981-19-0745-6_38

20247. Rasel, S.R., Khan, K.A., Bhattacharyya, S. (2022). Electricity Generation Using Soil and Living PKL Tree. In: Mandal, J.K., Hsiung, PA., Sankar Dhar, R. (eds) Topical Drifts in Intelligent Computing. ICCTA 2021. Lecture Notes in Networks and Systems, vol 426. Springer, Singapore. https://doi.org/10.1007/978-981-19-0745-6_55

248. **Khan KA** (2008) Patent as an Inventor, Electricity Generation form Pathor Kuchi Leaf (PKL), Publication date 2008/12/31, Patent number BD 1004907

249. **Khan DMKA** (1997) Patent as an Inventor, Production of Soap by Solar System. Patent Serial No. 10029941

250. **Khan DMKA** (1999) Patent as an Inventor, Improvement in or Relating to Production of Candles by Solar System. Patent Serial No. 1003287

251. Khan DMKA (2001) Patent as an Inventor, Medical Sterilizer by Solar System. Patent Serial No. 1003646

252. R. Sankar, R. Maheswari, S. Karthik, K.S. Shivashangari, V. Ravikumar, Anticancer activity of Ficus religiosa engineered copper oxide nanoparticles, Mater. Sci. Eng. C 44 (2014) 234– 239.

253. S. Mohapatra, S.K. Mallick, T.K. Maiti, S.K. Ghosh, P. Pramanik, Synthesis of highly stable folic acid conjugated magnetite nanoparticles for targeting cancer cells, Nanotechnology 18 (2007) 9.

254. R. Majumdar, B.G. Bag, N. Maity, Acacia nilotica (Babool) leaf extract mediated size-controlled rapid synthesis of gold nanoparticles and study of its catalytic activity, Int. Nano Lett. 3 (2013) 53, https://doi.org/10.1186/2228-5326-3-53.

255. T. Ghosh, T. Chattopadhyay, S. Das, S. Mondal, E. Suresh, E. Zangrando, D. Das, Thiocyanate and dicyanamide anion controlled nuclearity in Mn Co, Ni, Cu, and Zn metal complexes with hemilabile ligand 2-benzoylpyridine, Cryst. Growth. Des. 11 (2011) 3198–3205.
256. B. Das, S.K. Dash, D. Mandal, T. Ghosh, S. Chattopadhyay, S. Tripathy, S. Das, S.K. Dey, D. Das, S. Roy, Green synthesized silver nanoparticles destroy multidrug resistant bacteria via reactive oxygen species mediated membrane damage, Arab. J. Chem. 10 (2017) 862–876.
257. S. Chattopadhyay, S.K. Dash, S. Tripathy, P. Pramanik, S. Roy, Phosphonomethyl iminodiacetic acid–conjugated cobalt oxide nanoparticles liberate Co++ ion–induced stress associated activation of TNF–a/p38 MAPK/caspase 8–caspase 3 signaling in human leukemia cells, J. Biol. Inorg. Chem. 20 (2015) 123–141.
258. S.K. Dash, T. Ghosh, S. Roy, S. Chattopadhyay, D. Das, Zinc sulfide nanoparticles selectively induce cytotoxic and genotoxic effects on leukemic cells: involvement of reactive oxygen species and tumor necrosis factor alpha, J. Appl. Toxicol. 34 (2014) 1130–1144.
259.S.P. Chakraborty, S.K. Mahapatra, S.K. Sahu, S. Das, S. Tripathy, S. Dash, P. Pramanik, S. Roy, Internalization of Staphylococcus aureus in lymphocytes induces oxidative stress and DNA fragmentation: possible ameliorative role of nanoconjugated vancomycin, Oxid. Med. Cell. Longev. 15 (2011(2011)) pages, https://doi.org/10.1155/2011/942123.
260. A. Roy, A. Ganguly, S. BoseDasgupta, B.D. Benu, C. Pal, P. Jaisankar, H.K. Majumder, Mitochondria-dependent reactive oxygen species-mediated programmed cell death induced by 3,3a-diindolylmethane through inhibition of F0F1-ATP synthase in unicellular protozoan parasite Leishmania donovani, Mol. Pharmacol. 74 (2018) 1292–1307.
261. X. Lin, J.C. Huang, T.G. Mitchell, J. Heitman, Virulence attributes and hyphal growth of C. neoformans are quantitative traits and the MATa allele enhances filamentation, PLoS Genet. 2 (2006) e187.
262. C.Y. Looi, A. Arya, F.K. Cheah, B. Muharram, K.H. Leong, K. Mohamad, W.F. Wong, N. Rai, M.R. Mustafa, Caspase pathway by vernodalin isolated from Centratherum anthelminticum (L.) seeds, PLoS One 8 (2013) e56643.
263. G. Xu, J. Ahn, S. Chang, M. Eguchi, A. Ogier, S. Han, Y. Park, C. Shim, Y. Jang, B. Yang, A. Xu, Y. Wang, G. Sweeney, Lipocalin-2 induces cardiomyocyte apoptosis by increasing intracellular iron accumulation, J. Biol. Chem. 287 (2012) 4808–4817.
264. K. Takiguchi, T. Nakamoto, H. Inagawa, C. Kohchi, T. Nishizawa, N. Nagasue, G.I. Soma, Profile of cytokines produced in tumor tissue after administration of cyclophosphamide in a combination therapy with tumor necrosis factor, Anticancer Res. 24 (2004) 1823–1828.
265. O.H. Lowry, N.J. Rosebrough, A.L. Farr, R.J. Randall, Protein measurement with the Folin phenol reagent, J. Biol. Chem. 193 (1951) 265–275