

Dr. Hazir Farouk – OCTOBER 2016

Hazir Farouk graduated as a mechanical engineer from Sudan university of Science and Technology (SUST), did her M.Sc. in University Technology Malaysia (UTM) on Advanced Manufacturing Technology, and her Ph.D. was in biofuels. Now she is an assistant professor at the Mechanical Engineering School, Sudan University of Science and Technology. She is also a board member of the World Bioenergy Association, representing North Africa, Sudan and the Gulf countries.

Dr Farouk's studies, experience and background, combined with her experience within Sudan – as well as in the Nordic countries, Malaysia, Turkey and Central Europe - gives her a strong technical understanding of biofuels production and technologies, backed up by seeing first-hand the way used cooking oil is converted to biodiesel at an industrial scale in Germany, how biofuels (including upgraded biogas) are used for Swedish city and private vehicles and public transport, and seeing how biogas produced from manures, food wastes and slaughterhouse residues can be used at household scale , and at larger scale for powering generators and can be compressed into gas containers for cooking (for apartments) and to be a fuel for motorised transport systems (i.e., motor rickshaws).

Since becoming a board member of the World Bioenergy Association – representing not only /Sudan but all the countries of North Africa and the Arabic speaking countries of the Gulf region, Dr Hazir has acquired extremely valuable new networks that enable her to access expertise from acknowledged world experts in many areas of bioenergy technologies, not only within the WBA but also from the International Energy Agency, International Renewable Energy Agency (IRENA), the Jatromed group (based at Athens University), REN 21 and UNEP, as well as the Cairo-based organization RCREEE and UN ESCWA.

Personal details

Family name: FAROUK ABDELRAHEEM ELHAJ

First name: HAZIR

Date and place of birth: 02-08-1976, Nth Kordofan-Sudan

Nationality: Sudanese

Religion: Islam

Marital status: Mother of two girls

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Education

Degree awarded	University	Date awarded
Mechanical Engineering, PhD (Biofuel) – Title of Thesis: Optimization of production and performance of uses of jatropha based biodiesel	Sudan University of Science & Technology (SUST) & Universiti Tecknologi Malaysia (UTM)	December 2013
Master of Science in Advance Manufacturing Technology(ATM)	Universiti Tecknologi Malaysia (UTM)	March 2006
Bachelor of Science in Mechanical Engineering, (1st class Honor)	Sudan University of Science & Technology (SUST)	July 2000

Languages Skills

- Arabic Native
 - English (Speaking and Writing) Fluent
 - Bahasa Melayu (Speaking) Basic
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Employment Record

2014 - 2016	General Manager Roadmap Engineering and Roadmap Training Center	Sudan
2014 up to date	Head of biogas research group Sudan University of Science and Technology (SUST)	Sudan
2014 up to date	Head of Statistics and Information Unit, College of Graduate Studies Sudan University of Science and Technology (SUST)	Sudan
2014-2015	Main contact person representing Aeronautical Research Centre International Air Transport Association (IATA)	Sudan
2013 up to date	Assistant Professor, School of Mechanical Engineering Sudan University of Science and Technology (SUST)	Sudan
2012 - 2014	Consultant and head of biofuels research group Aeronautical Research Centre (ARC- Sudan)	Sudan
2006-2012	Lecturer, Department of Mechanical Engineering Sudan University of Science and Technology (SUST)	Sudan
2006-2010	Visiting Lecturer, Department of Mechanical Engineering Training Experience and Short Courses (2010-2016) Kordofan University	Sudan
2000-2003	Teaching Assistant, Department of Mechanical Engineering Sudan University of Science and Technology (SUST)	Sudan

International membership and committees

2014 up to date	Board member representing Sudan and North Africa and Arabic speaking Countries, World Bioenergy Association (WBA)	Sweden
2014 up to date	Member of Steering Committee-WBA Global Bioenergy Statistics World Bioenergy Association (WBA)	Sweden
2014 up to date	Member of Conference Committee, World Sustainable Energy Days conference (WSED)	Austria

National membership and committees

2016 up to date	Member of Renewable Energy and Water Harvesting Directorate, Sudan Foundation	Sudan
2015 up to date	Member of Agriculture Technology Transfer Society	Sudan
2015 up to date	Member of Reviewers Committee, Journal of Engineering and Computer Science, Sudan University of Science & Technology	Sudan
2014 up to date	Member and Secretary of Renewable Energy Committee, Sudan University of Science and Technology (SUST)	Sudan
2010 up to date	Member of Sudanese Engineering Society	Sudan
2010 up to date	Member of Engineering Council	Sudan

RE-Key Training:

Regional Training on Renewable Energy projects development, finance and business planning, UN ESCWA, Rabat, Morocco.	2016
Short course: System Engineering - RMTC, Khartoum, Sudan.	2016
Short course: Development of business case- RMTC, Khartoum, Sudan.	2015
Compact Biogas Course -Oldenburg University, Germany.	2015
Preparation Course for Project Management Professional (PMP) and Scheduling Professional (SP) - Khartoum, Sudan.	2014
Research Training: Production of Biodiesel in Pilot Plant - University Malaysia Bahang, Bahang, Malaysia.	2013
Research Training: Production of Biodiesel in Lab Scale - Institute Technology Bandung (ITB), Bandung, Indonesia.	2012
Research Training: Mini plant for biodiesel production - University Technology Malaysia (UTM) in collaboration with Institute Technology Bandung (ITB), Johor, Malaysia.	2012

Funded Research Projects/ Principal Researcher:

Project Title	Sponsor	Date
Design and Installation of Cost Effective Household Anaerobic Digester	Deanship of Scientific Research, SUST.	2014 up to date
Action Plan for Biojet Production from A National feedstock	Aeronautical Research Centre (ARC – Sudan)	2013- 2014
Jatropha oil production for biodiesel and other products – a study of issues involved in production at large scale.	Aeronautical Research Centre (ARC – Sudan)	2012 –2013

Supervised Research Projects in B.Sc. Level at SUST- (Main Supervisor)

1. Design and Installation of Household Anaerobic Digester, 2014-2015.
 2. Used Cooking Oil (UCO): A promising Feedstock for Biodiesel Production -Case Study of College of Engineering at SUST, 2014-2015.
 3. Diesel engine performance and exhaust emission analysis by using biodiesel derived from used cooking oil. 2014-2015.
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Supervised Research Projects, M.Sc. and Ph.D. Level at UTM (Co-Supervisor)

1. Study on performance of biodiesel jatropha oil in a combustion system, Faculty of Mechanical Engineering, Universiti Teknologi Malaysia.2015-2016.
 2. Optimization of Production and Performance of Jatropha-based biojet, Faculty of Mechanical Engineering, Universiti Teknologi Malaysia. *Started 2016.*
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RE Conferences/Workshops - Speaker/participant

- Consolidation Workshop on "Sustainable Energy Access for Rural Areas", Beirut, Lebanon 2016 within the framework of the Seventh Beirut Energy Forum.
 - 6th International 100% Renewable Energy Conference (IRENEC 2016) - Istanbul, Turkey. 2016
 - Improving Sudan's resilience to climate change by use of appropriate technologies. - by Sudan Foundation, Khartoum, Sudan 2016
 - 1st Environmental Conference by High council of environment- Khartoum, Sudan. 2016
 - Practical Action Technology Justice Conference - Khartoum, Sudan 2015
 - United Nations Climate Change Conference - COP 21, Paris, France 2015
 - 5th International 100% Renewable Energy Conference (IRENEC 2015) - Istanbul, Turkey. 2015
 - 1st Conference for the techniques of environmentally friendly alternative energy- Students Welfare - Khartoum, Sudan. 2015
 - Low carbon development in Africa - Nairobi, Kenya. 2015
 - Liquid Biofuels - Energy Research Center, Khartoum, Sudan. 2014
 - Biogas to Energy in Sudan - Khartoum, Sudan. 2014
 - New Flight Route to Aviation Fuels in Sudan, Nile Petroleum Company and ARC - Khartoum, Sudan. 2014
 - 1st Francophone Conference in Energy and Environment - University of Gazira and embassy of France, Khartoum, Sudan. 2014
 - World Bioenergy 2014 Conference and Exhibition on Biomass for Energy - Jonkoping, Sweden. 2014
 - Oleofuel 2014 Conference - Dusseldorf, Germany. 2014
 - Green Energy in Sudan: Current and Future Vision - Khartoum, Sudan. 2014
 - International Bioenergy Exhibition & Conference (Bioenergy 2013) - Helsinki, Finland. 2013
 - International Conference of Computing, Electrical and Electronic Engineering (ICCEEE) - Khartoum, Sudan. 2013
 - 3rd International 100% Renewable Energy Conference (IRENEC 2013) - Istanbul, Turkey. 2013
 - World Sustainable Energy Days (WSED) - Wels, Austria. 2013
 - Sudan's Biofuel Roadmap - Assalam-Rotana hotel, Khartoum, Sudan. 2013
 - International Conference on Biomass for Biofuels and value-added products (ICBBVAP) - Kuala Lumpur, Malaysia. 2013
 - The Future of Renewable Energy in Sudan - Khartoum, Sudan. 2012
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National RE Seminars and Forums – Speaker

- Biogas technology and potential for Kordofan rural areas, General directorate for animal resources, Elobied, Nth Kordofan. 2016
- Biogas for sustainable clean energy- Maaz innovation for solar energy and environmental solutions, Kasala, East Sudan. 2016
- Manures to biogas and how this reduces need for wood and charcoal, Ahfad University forum- Khartoum, Sudan. 2016
- Rolling out household biogas, UNESCO chair for Women in Science and Technology forum- Khartoum, Sudan. 2016
- Turning environmental problems into investing opportunities, DAL Group environment forum- Khartoum, Sudan. 2015
- Business for Peace and Development & Engagement Opportunities, Environmental Initiative Organization for Sustainable Development (EnvI)- Khartoum, Sudan. 2015
- Bioenergy Technology for Electricity Production - Society of Mechanical Engineering - Khartoum, Sudan. 2014
- Bioenergy – A Source of Electricity, Industrial Heat and Cooling and Transport Fuels- Khartoum, Sudan.

Publications

Published reports

- *Andrew Lang, **Hazir Farouk***. The worldwide production of bio-jet fuels (The current developments regarding technologies and feedstocks, innovative new R&D developments, and the potential for Sudan). Sponsored by ARC-Sudan. 2014.
- *Andrew Lang, **Hazir Farouk***. Jatropha oil production for biodiesel and other products – a study of issues involved in production at large scale. Sponsored by ARC-Sudan. 2013.

Published journal and conference papers

- Khalid Khair, **Hazir Farouk**, Zainai Mohamed and R. Mohammad, Causes and Effects of Delay Factors in Road Construction Projects in Sudan, International Journal of Applied Engineering Research ISSN 0973-4562 Volume 11, Number 18 (2016) pp. 9526-9533.
- Norwazan Abdul Rahim , Mohammad Nazri Mohd Jaafar , Syazwana Sapee and **Hazir Farouk**, Effect on particulate and gas emissions by combusting biodiesel blend fuels made from different plant oil feedstocks in a liquid fuel burner. *Energies* 2016, 9, 659; doi:10.3390/en90806.
- **H. Farouk**, MNM Jaafar, AE Atabani. A Study of Biodiesel Production from Crude Jatropha Oil (CJO) with High Level of Free Fatty Acids *Jurnal Teknologi*, Volume 69-Issue 3. 2014.

Published conference papers

- **Hazir Farouk**, Developing Bankable Biomass-to- Energy Projects Across Africa. *Proceeding of 6th International 100% Renewable Energy Conference (IRENEC 2016)*. Maltepe-Istanbul, Turkey. May 2016.
- **Hazir Farouk**, Andrew Lang, Developing a new Approach for Anaerobic Digestion at Large and Small Scale in Sudan. *Proceeding of 5th International 100% Renewable Energy Conference (IRENEC 2015)*. Maltepe-Istanbul, Turkey. May 2015.

- **Hazir Farouk**, Andrew Lang, Production of Transport Biofuels in Sudan for Replacement of Petroleum Fuels: The Fundamental Issues. Khartoum Biofuels Conference. Khartoum, Sudan. November 2014.
- **Hazir Farouk**. Development of a Biofuels Roadmap for Sudan, and the existing solid basis for an expanded biofuels production. World Bioenergy 2014 Conference and Exhibition on Biomass for Energy. Jonkoping, Sweden. June 2014.
- Andrew Lang, **Hazir Farouk**. Today's Global Biojet fuel Industry-An analysis of bio-jet production projects around the globe, Oleofuel 2014 Conference. Dusseldorf, Germany. June 2014.
- **Hazir Farouk**, Andrew Lang, Nasr Elhoussein, 2013. Biofuel Production Potential in Sudan, *Proceeding of Bioenergy 2013 Conference*, Finland. September 2013.
- **Hazir Farouk**, Andrew Lang, Mohammed Elhadi, Jatropha Curcas: A Viable Alternative Source of Clean Energy to Meet Sudan's Growing Energy Demand, *Proceeding of ICCEEE Conference*, 287-293. Khartoum, Sudan. August 2013.
- **Hazir Farouk**, Andrew Lang, Mohammed Elhadi. Sudan's Biofuel for Transportation Roadmap, *Proceeding of 3rd International 100% Renewable Energy Conference (IRENEC 2013)*. Maltepe-Istanbul, Turkey. June 2013.
- **Hazir Farouk**, Mohammad Nazri Mohd Jaafar, Tirto Prakoso, Sabir Mohammad Salih, Biodiesel production from Crude Jatropha Oil (CJO) in pilot plant, *Proceeding of Fourth International Graduate Conference (IGCESH)*. University Technology Malaysia, Johor, Malaysia. April 2013.
- **Hazir Farouk**. Using pelletized biofuel residues as a cooking fuel, *World Sustainable Energy Days (WSED)*, Wels, Austria. February 2013.

Under review journal papers

- **Hazir Farouk**, Seyed Mojib Zahraee, A.E. Atabani, Mohd Jaafar, Fatah H. Alhassane, R. Yunusf, Y.H. Taufiq-Yape. Optimization of Esterification Process of Crude Jatropha Oil (CJO) Containing High Levels of Free Fatty Acids: A Malaysian case study.
- Norwazan, A.R., Mohd Jaafar, M.N., **Hazir Farouk**, Syazwana Sapee. Emissions of Jatropha oil-derived biodiesel blend fuels during combustion using high swirling flow in a liquid fuel burner
- **Hazir Farouk**, AbduAllah Husien, Hazim Ali, Samah Osama, Production and analysis of characteristics of biodiesel produced from waste cooking oil.
- **Hazir Farouk**, Hisham Mohammed, Mohammed Ahmed, Mohammed Siddiq, Tarig Adam, Mazin Zaidan, Exhaust emission and engine performance of biodiesel produced from waste cooking oil.
- **Hazir Farouk**, Mutaz Elobaid, Omer Abdelazim, Mohammed Salah, Khalid Bakheet. Design and installation of household anaerobic digester.
- Khalid Khair, **Hazir Farouk**, Zainai Mohamed, R. Mohammad and Mohammed Elhadi, A Framework to Minimize Project Delays in Sudan's Road Construction Industry.

Awards

- Best Paper award: International Conference of Computing, Electrical and Electronic Engineering (ICCEEE), Khartoum, Sudan, August 2013.
- Outstanding Program Coordinator - University Technology Malaysia (UTM), Kuala Lumpur. Malaysia, February 2016.

Professional Activities

- Visiting Researcher: Faculty of Mechanical Engineering, University Technology Malaysia, Johor, Malaysia (2015,2016).
- Reviewer: Journal of Engineering and Computer Science, Sudan University of Science and Technology
- Reviewer: World Sustainable Energy Days conference (WSED 2014, 2015, 2016).
- Advisor for Waste to Energy and biogas projects for High Council of Environment and urban and Rural Promotion, Khartoum, Sudan.

Teaching Skills (Areas of Study)

1. Engineering Economy Analysis
2. Production Planning and Control
3. Operation and Production Management
4. Operation Research
5. Project Management
6. Research Methodology
7. Renewable Energy

Area of Expertise and Interest

1. RE technologies
2. Development of RE project plans,
3. Development of Technology Road maps and Action Plans
4. Project Management

Referees

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