

9<sup>th</sup> World Congress on

# Chemistry and Medicinal Chemistry

May 13-14, 2019 | Prague, Czech Republic



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### Clean energy technologies make significant contributions in mitigating the global warming challenges

Energy is the principal resource and most universal measure of all kinds of work by human beings and nature. It is a fundamental contributor in the process of economic, social and industrial development of various hubs around the globe. The traditional energy sources are gradually diminishing, the use of alternative renewable energy sources provide the possible solution to the environment. The significant increase in energy demand is diminishing the non-renewable fossil fuel resources which cause more harm to the environment leading to the most serious global warming challenges. The fundamental ideas of renewable energy resources are related to the issues of sustainability, renewability, pollution and contamination reduction. Hence, the need to discuss various renewable energy resources and their utilization for future growing energy demands. The important development of any country is directly associated to the energy resources present as it is the backbone of energy technology. To mitigate the growing energy demands which continue to create unnecessary pressures on the natural energy resources, it is indispensable for the world to focus on renewable energy technologies to mollify the demand and preserve our finite natural resources for the generations to come. As the primary energy comes from the finite, non-renewable fossil fuels therefore it's highly crucial to explore other renewable energy possibilities such as biomass, solar, wind, hydroelectric, geothermal, hydrogen gas energy, wave

and tides. This talk will discuss a few options for sustainable energy technologies derived from the organic photovoltaic cells which have a massive industrial application.

#### Speaker Biography

J S Sefadi is a senior lecturer (Physical Chemistry & materials Science) and an emerging researcher at Sol Plaatje University (SPU). He received his BSc degree in Chemistry Physics (2007); BSc Honours degree in Polymer Science (2008); MSc in Polymer Science (2010) and his PhD degree in Polymer Science (2015) all from University of the Free State. During his spell, he joined the chemistry department at QwaQwa campus as a DST/NRF intern in 2009. He consistently and constantly carried-out the lecturing duties as a junior lecturer in chemistry department for general chemistry, physical chemistry, and inorganic chemistry during the year 2011. He was then appointed as a chemistry lecturer (2014–2015) and then got the green pastures in Kimberley, SPU as senior lecturer, the position he currently holds. He gained an international exposure as a visiting researcher in countries like Slovakia, Bratislava (2009) and Germany, Dresden (2011 & 2012). Upholding an active research status/work with other collaborators, his research interests focus on investigating the renewable and/or sustainable energy projects, climate change etc. He presented his research projects and results at national and international conferences. He has authored publications in scientific peer-reviewed journals and co-authored some scholarly book chapters in SAGE, NOVA and Intech Open Access Publishers. He is currently serving in the Insourcing Advisory Committee (IAC), Institutional Forum (IF), Senate Committee on Research (SCR), Research Chair (RC) and marketing committee of Sol Plaatje University (SPU).

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