



## PhD Candidate Profile

**Name:**

Habeebllah Oladipo

**Research Group (if relevant):**

N/A

**Research Centre (if relevant):**

Research and Innovation Center on CO<sub>2</sub> and H<sub>2</sub> (RICH)

**Department/School(s) (if relevant):**

Department of Chemical Engineering

**College:**

Khalifa University of Science and Technology

**Supervisor(s):**

Dr. Giovanni Palmisano

**Funding body:**

Khalifa University of Science and Technology

**Area (field) of study:**

Photocatalytic hydrogen production

**Thesis Title:**

Photocatalytic Hydrogen production from Hydrogen sulphide

**Abstract:**

The abundance of H<sub>2</sub>S in processes such as coal mining, natural gas sweetening and crude oil refinery has been a persistent challenge in the related industries. Apart from H<sub>2</sub>S unpleasant odour, it is also a very poisonous gas – affecting human metabolism at concentration as low as 5 ppm. Thus, its utilization is as important as its removal in both coal and oil and gas industries.

An old technology for H<sub>2</sub>S utilization, Claus process, involves H<sub>2</sub>S oxidation to elemental sulfur and water. This process is economically viable for large treatment plants and it constitutes the underlying principle presently used when large volume of H<sub>2</sub>S is to be removed in the industry.

In this study, photocatalytic hydrogen production from aqueous solution of H<sub>2</sub>S is explored using TiO<sub>2</sub> and CdS based catalysts. Possible reaction mechanisms will also be investigated since there is no established mechanism for photocatalytic hydrogen production from sulphides. This will unleash the roles of each of the ions present in the aqueous sulphide solution.





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### Collaborations:

N/A

### Publications:

1. Habeebllah Oladipo, Corrado Garlisi, Khalid Al-Ali, Elie Azar and Giovanni Palmisano "Combined photocatalytic properties and energy efficiency via multifunctional glass", J. Env. Chem. Eng., 2019, **7**, 102980
2. Lutfiye Y. Ozer, Yuyoung Shin, Alexandre Felten, Habeebllah Oladipo, Oluwadamilola Pikuda, Christopher Muryn, Cinzia Casiraghi and Giovanni Palmisano "Growing N-doped multiphase TiO<sub>2</sub> nanocomposites on graphene oxide: characterization and activity under low energy visible radiation", J. Env. Chem. Eng., 2017, **5**, 5091-5098
3. Lutfiye Yildiz Ozer, Corrado Garlisi, Habeebllah Oladipo, Mario Pagliaro, Saad Asadullah Sharief, Ahmed Yusuf, Saif Almheiri and Giovanni Palmisano. "Inorganic semiconductors-Graphene Composites in Photo(electro)catalysis: Synthetic Strategies, Interaction Mechanisms and Applications", J. Photochem. Photobiol., 2017, **33**, 132-164
4. Habeebllah B. Oladipo, E. A. Jaseer, Alejandro Julian, Francisco J. Fernandez-Alvarez, Sulaiman Al-Khattaf and Luis A. Oro. "Effect of CO<sub>2</sub> pressure on the Hydrosilylation of CO<sub>2</sub>, catalysed by [Ir(NSiN)] Species", J. CO<sub>2</sub> Util., 2015, **11**, 49-53
5. E. A. Jaseer, Muhammad N. Akhtar, Mogahid Osman, A. Al-Shammari, Habeebllah B. Oladipo, Karin Garcés, Francisco J. Fernández-Alvarez, Sulaiman Al-Khattaf and Luis A. Oro "Solvent-Free Iridium Catalyzed CO<sub>2</sub> Hydrosilylation: Experiment and Kinetic Modelling", Catal. Sci. Technol., 2015, **5**, 274-279

### Presentations: