



**Title:**

**Green Hydrogen Production Technologies: A Key Investment in the Energy Transition**

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**Abstract:**

Hydrogen has a promising future as a fuel and renewable energy source. Unfortunately, the current methods of producing hydrogen are quite expensive, and the dilemma is finding a more cost-effective and convenient process. Furthermore, green hydrogen production by microorganisms is a source of sustainable, inexpensive, and infinite energy. Therefore, they're necessary for microorganisms to create hydrogen on a vast scale. However, reducing the cost of production, delivery, storage, conversion, and practical usage of green hydrogen is a significant technical barrier to hydrogen's applications. Our research project focuses on developing photobioreactors incorporating microorganisms into green hydrogen production.

Another issue in hydrogen production is storage. Standard energy storage is batteries. While considerable research is being conducted to improve battery architecture, the immense magnitude of future energy storage requirements necessitates the development of other strategies. Our research aims to build a time-dependent model incorporating mass and charge conservation and transfer phenomena, as well as Butler–Volmer–Monod kinetics.

**Biography:**

Yathrib Ajaj is a faculty member of the Engineering Department at the German University of Technology in Oman. Her job includes research, teaching, and student supervision. Her research interests are to improve energy efficiency and renewable energy technology. She focuses on core technology, such as processes for building energy systems and identifying new sources of demand for their reuse.