**Presentation Title**

**Shabana P.S.Shaikh**

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**Presenter Name: Dr Shabana Shaikh**

**Abstract: Short description of the presentation topic about 250 to 600 words.**

## Title: Rational synthesis of 10GDC electrolyte through a microwave irradiation GNP facile route for SOFC applications

The gadolinium-doped ceria Gd0.1Ce0.9O1.95 (10GDC) powder was synthesized using a microwave-synthesized glycine nitrate process (MS-GNP) and sintered at different, high temperature in a furnace for 4 h so as to investigate the effect of the sintering temperature and sintering environment on the structural, morphological, thermal and electrical properties. The crystallite size and particle size as observed from X-Ray Diffraction (XRD) and Field Emission Scanning Electron Microscopy (FESEM) are found to be in the range of 15–28 nm and 12–20 nm, respectively. The electrochemical impedance spectroscopy (EIS) analysis was carried out to study the electrochemical properties during the cooling cycle from 400 °C to 800 °C. The highest value of ionic conductivity (3.55 × 10−1 S cm−1) is observed at an operating temperature of 800 °C and O2 gas partial pressure of 1 atm. Further, it is observed that the sintering temperature has a significant effect on the surface morphology and crystallite size, thereby improving the electrical performance of the samples. Though 20GDC was used as an electrolyte in the authors' previous study, the novelty of the present work is the synthesis of 10GDC using a microwave-assisted glycine nitrate process and the size (thickness) of the prepared electrolyte for use in a Solid Oxide Fuel Cell (SOFC), which plays a major role in enhancing the structural, morphological and electrochemical properties with respect to different sintering temperatures as compared to the reported data. Hence, the prepared 10GDC electrolyte may be treated as one of the promising candidates as an electrolyte for SOFC and SOEC for intermediate as well as high temperature applications.

**Biography of Presenter about 100 words:**

**Dr Shabana Shaikh**

**Hydrogen & Fuel cell Technology Expert**

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Dr Shabana Shaikh brings 15+ years of professional experience with PhD in Materials Science & Engineering -hydrogen fuel cell technology, with the sound technical and business knowledge of energy sector, she is technically skilled and impactful in R&D, Innovation to commercialization with thought leadership experience directing critical global projects for the green hydrogen, green e-mobility, h2 storage and transportation, fuel cell and electrolyser in industries as well as establishing state, national and international collaboration strategy for the art testing facilities and strategic Centres of Excellence. She is continuously contributing in technical capability assessment for B2B collaboration, infrastructure and capex strategy, team buildings through trainings, supporting cross functional BU’s on hydrogen technology technical aspects. Supporting social responsibility dept and Business and strategy team at National and global platform and also actively

Supporting for regulation bodies.Currently she is providing her technical suppport to SP2X Pvt Ltd, India as a Technical Director. In recent past she worked as a Technical project leader with Cummins, Totalenergies and several other organizations.In her last job she worked as a Sr General Manager-Innovation & Product Development and executed Indian ministry funded project on hydrogen fuel cell e bus and hydrogen storage and transportation

at industrial level. She is having sound experience of project execution and management. She has proven skills such as strong interpersonal and negotiation in terms of business growth which allowed her to build long-term technology driven relationships in a corporate sector for setting up close alignments between academic, research and industries develop strategic partnership among stakeholders (both internal and external), motivating and mentoring high performance teams, She have been able to consistently deliver successful outcomes for challenging research and development initiatives dynamically & independently. She had led several projects and innovative solutions in the development of low-cost, highenergy density electrolyte materials for fuel cell, and have extensive knowledge of new and alternative energy storage technologies. She is having commands on various experimental chemical synthesis and characterization analysis of different nanomaterials for fuel cell, solid oxide electrolyser, proton conducting battery materials, solar cell materials. Throughout her career, she has developed strong analytical skills and

business acumen which helped me to solve complex problems, deliver changes and revenue growth in the last organization with full accountability. She has led majorly five projects as a project leader and projectin vestigator successfully for hydrogen fuel cell e -bus, fuel cell electric 3- wheeler, fuel cell e-tractor,lecetrolyser test rig design and development and h2 storage and transportation by managing a mid size team.

Dr Shabana is an ARAI -Expert panel member of All India Standard commission for formulation of AIS standards for hydrogen powered e vehicles for INDIA Regulations with

active participation. Recently the Hydrogen fuel cell e bus which was designed and developed by Shabana and executed under her leadership has been inaugurated by Hon’ble Prime Minister of India.

She is having sevral high impact and higly cited research publications and patent in the Nanoscience and materials chemistry. She is the member of several prestigious professional bodies and peer reviewer for several international high impact journals of energy domain.

She is very dynamic, innovative and passionate about making clean energy futures for everyone to lead a happy life for society with clean enviornment by decarbonization.

**Details of presenting author to be mentioned in certificate:**

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* **Please to attach a recent high-resolution photograph of the presenting author.**

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