

Fuel Cell Materials

Product Feature

Focus on the Fuel Cell and Let us Focus on Your Paste

As the world reaches record levels of power consumption, the need for clean and renewable energy sources is apparent for a sustainable future. There are many alternative power generation sources which might provide cleaner energy generation than those derived from fossil fuels. One such alternative energy generation method is Fuel Cells. Fuel Cells are a method of high efficiency power production that generates electrical energy through an electrochemical process rather than by fuel combustion, as seen in Figure 1. There are a variety of fuel cell designs and **Heraeus Thick Film Materials Division**, a globally active material supplier, is supplying materials for two cell types: the solid oxide fuel cell (SOFC's), and the proton exchange membrane (PEMFC) type fuel cell.

Heraeus Thick Film Material Division is a worldwide supplier of materials to many different markets. Some of the markets include alternative energy, automotive, microelectronic, high reliability, sensor and consumer. Heraeus TFD is an ISO9001:2000 approved supplier with manufacturing sites in the United States, Germany, and China. These sites manufacture thick film pastes for many applications. With over forty years experience as a high volume supplier, Heraeus TFD has a proven track record to produce standard and custom formulations in a highly technical and cost effective environment.

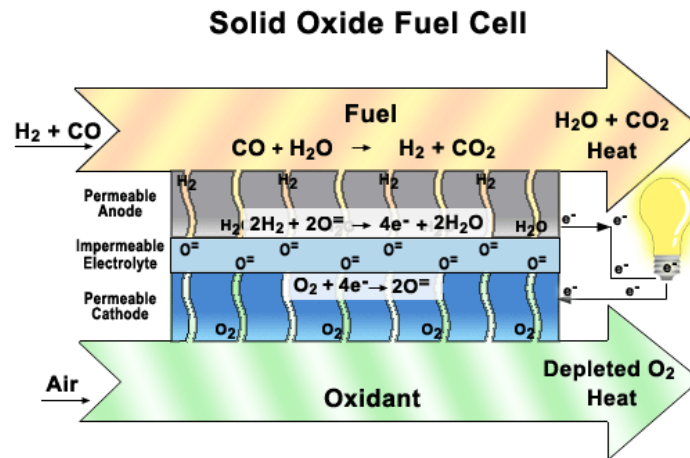


Figure 1: Schematic of Fuel Cell operation

Heraeus TFD offers many off the shelf items for your fuel cell applications including precious metal powders for catalyst, conductive perovskites & doped ceria conductors, functional anode & electrolyte supported materials, conductors for current collectors, sealing materials for ferritic interconnect alloys for charge collection, and specialized bonding materials for SOFC cell stacks. Along with these materials Heraeus TFD can custom manufacture your proprietary formulations (NDA's and CRADA's are invited). Heraeus TFD understands and recognizes the importance of your intellectual property and will work closely with you in a confidential environment to insure successful high volume manufacturing of your cost sensitive formulations.

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Courtesy of: Forschungszentrum Jülich



Materials and Products

- Thick film functional screen printable pastes (ideally suited for SOFC manufacture):
 - Conductors, resistors, dielectrics
 - Sealing glasses, overglazes,
 - Pt and Pt group pastes for high temperature applications
 - Oxide materials (LSM, YSZ, GDC, NiO)
 - Organic resin vehicles
- Precious Metal Powders
 - Pt and Pt Group metal powders, coprecipitated mixtures, binary alloys, etc
 - High conductivity silver powders, flake, oxides
- Pastes are available with tailored viscoelastic properties and rheologies that are suitable for application methods including:
 - Screen printing
 - Dipping
 - Spraying
 - Dispensing
 - Roller Coating
 - Pad Printing

At Heraeus TFD we also offer many services that can facilitate the development of your products in the exciting field of fuel cells.

Services

- Screen printing prototyping
- Firing
 - Continuous belt furnaces
 - Box furnaces
 - Alternate atmosphere belt furnaces
- Paste Characterization
 - Rheology assessment and optimization
 - Printability assessment and optimization
 - Solids content

If you are interested in fuel cell technology and materials for fuel cells please contact your local Heraeus TFD representative or our US plant for more information on how Heraeus TFD can help you.

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The descriptions and engineering data shown here have been compiled by Heraeus using commonly-accepted procedures, in conjunction with modern testing equipment, and have been compiled as according to the latest factual knowledge in our possession. The information was up-to date on the date this document was printed (latest versions can always be supplied upon request). Although the data is considered accurate, we cannot guarantee accuracy, the results obtained from its use, or any patent infringement resulting from its use (unless this is contractually and explicitly agreed in writing, in advance). The data is supplied on the condition that the user shall conduct tests to determine materials suitability for a particular application.

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