



Cathode Materials

fuelcellmaterials.com offers high-performing perovskite materials for use as electrodes for ceramic and electrochemical devices are particularly well suited for use as solid oxide fuel cell cathodes. Our product focus is on lanthanum strontium manganite (LSM), lanthanum strontium cobalt ferrite (LSCF) and composite cathodes, which are mixtures of electrolyte and electrode materials. Composite cathodes are used to improve catalytic activity of the perovskite materials.

fuelcellmaterials.com's patent-pending processes for fabricating composite cathodes maximize the dispersion of the electrolyte and cathode phases, enabling greater catalytic activity than can be achieved through simple mixing. Recent improvements to methods for producing both standard and composite cathodes are yielding materials with even better performance, as is demonstrated in Figure 1.

Cathode materials are available in various quantities of powder. *fuelcellmaterials.com* offers standard compositions with specifications in Table 1. These products are available for online ordering through www.fuelcellmaterials.com. Large orders are welcome.

fuelcellmaterials.com will use its wealth of materials processing knowledge to produce materials that meet your specific processing and performance requirements while reducing your overall costs. Contact us to find out more.

Table 1. Materials Selection Guide				
Formulation	Composition (slightly A-site deficient)	CTE (ppm/°C)	Electrolyte Materials	Temperature Range (°C)
LSM20	$(La_{0.80}Sr_{0.20})MnO_3$	11	YSZ, ScSZ	800 to 1000
LSCF6428	$(La_{0.60}Sr_{0.40})(Fe_{0.80}Co_{0.20})O_3$	15	GDC	650 to 800
LSM/YSZ	30 vol% YSZ	10	YSZ	750 to 900
LSM/GDC	40 vol% GDC	12	YSZ, GDC, LSGM	700 to 900
LSCF/GDC	30 vol% GDC	14	GDC, LSGM	600 to 750

The optimum cathode depends on the target operating temperature, thermal expansion, and chemical compatibility with the electrolyte material being used. Suggested selection criteria for cathode formulations are provided above.

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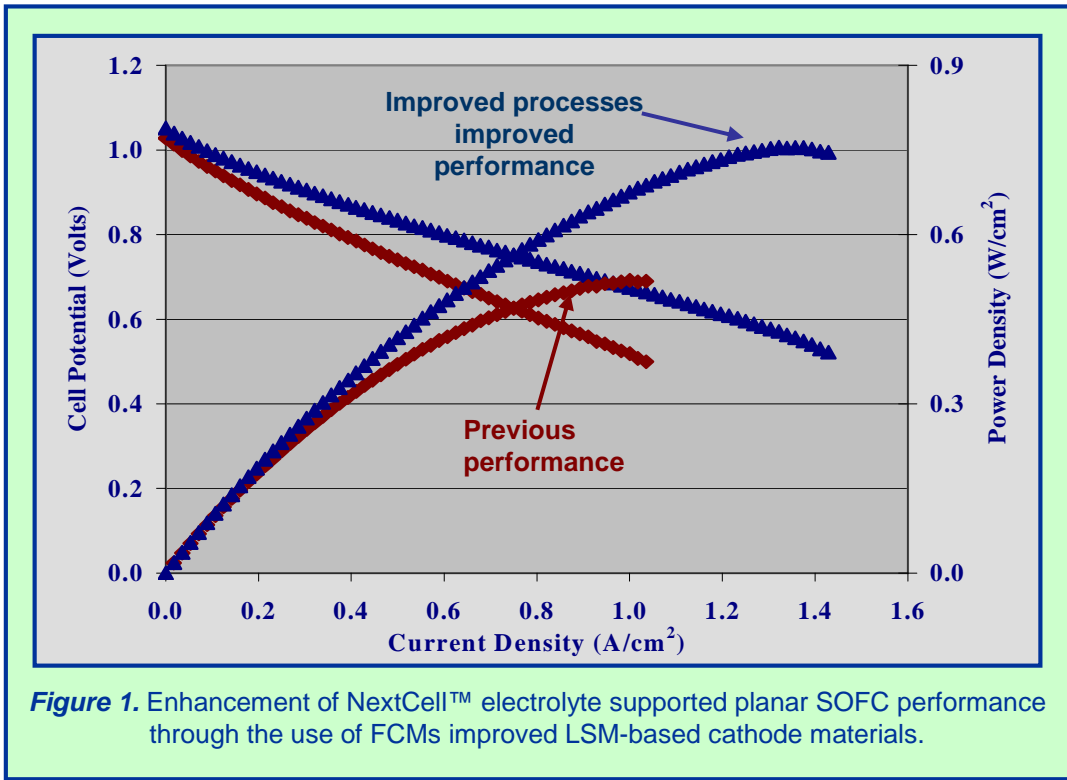


Figure 1. Enhancement of NextCell™ electrolyte supported planar SOFC performance through the use of FCMs improved LSM-based cathode materials.

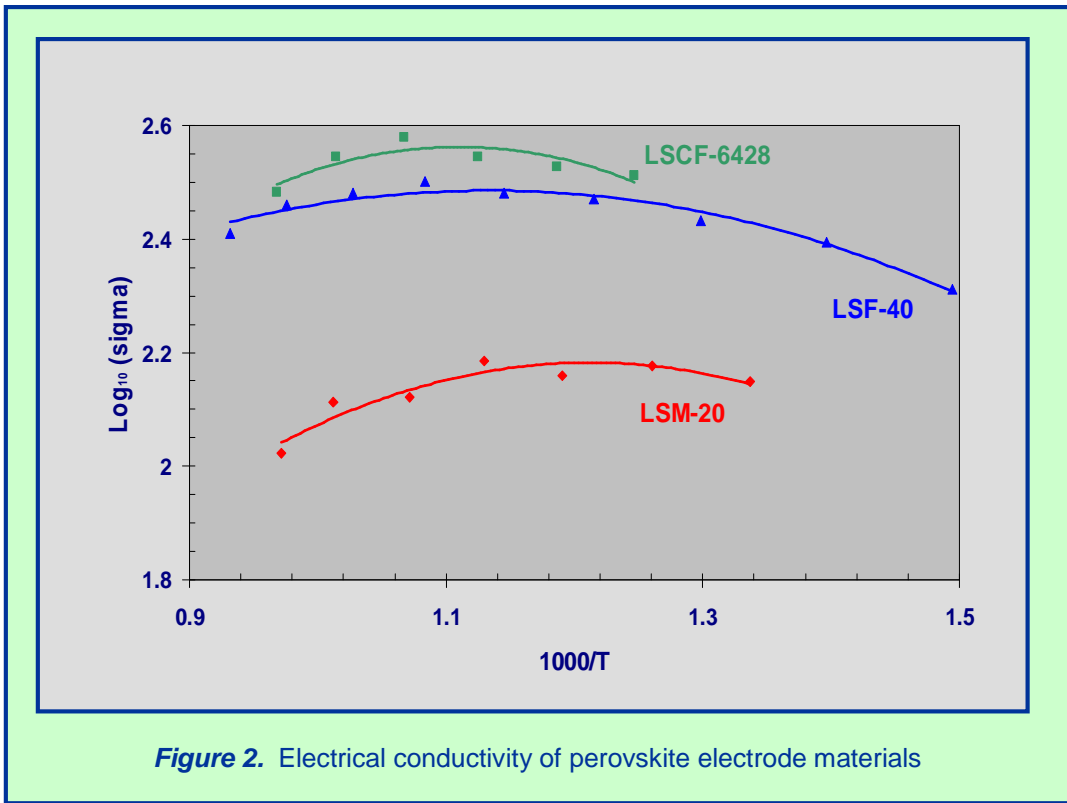


Figure 2. Electrical conductivity of perovskite electrode materials

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