Ceramic Anode-Supported Solid Oxide Fuel Cells with High Performance and Tolerances towards Carbon Deposition and Sulfur Poisoning

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H ₂ + CO H ₂ + CO H ₂ + CO CO + H ₂ O + H ₂ + CO ₂ Heat H ₂ + CO ₂ Heat	Fuel cell electrical efficiency, defined as: $\eta = \Delta G / \Delta H$		At 700°C				
	Reforming by partial oxidation: C ₄ H ₁₀ +2O ₂ =4CO+5H ₂		$\Delta H(kJ/mol)$	$\Delta G(kJ/mol)$	$\eta(\%)$	# e	
	Direct oxidation: $C_4H_{10} + 6\frac{1}{2}O_2 = 4CO_2 + 5H_2O$		-2,660	-2,810	106	26	
	After reforming: $4CO + 5H_2 + 4\frac{1}{2}O_2 = 4CO_2 + 5H_2O$		-2,370	-1,760	74	18	
$\int_{Coking} Sulfur poisoning Sulfur poisoning Sr_2Fe_xMo_{2-x}O_{6-\delta} (SFMO)$							
Synthesis		Modeling		Characterization			
 Solution based chemis Freeze-tape casting Sintering aids 	• Structu	 Multiphysics Structure – property Predicting and explanatory 		 Structure & microstructure Electrochemical performance In situ techniques 			
Collaborators: Unive	ersity of South Carolina	& Technology, Beijing: M. a: K. Reifsnider & P. Majur tory: <i>In-situ</i> neutron diffrac	mdar—Multip				

Brookhaven National Laboratory: X-ray absorption fine structure (XAFS)