

Nanopores Array of Ordered Mesoporous Carbons Determine Pt's Activity towards Alcohol Electrooxidation

Chaoxiong He¹, Yeru Liang², Ruowen Fu², Dingcai Wu^{2*}, Shuqin Song^{1*}, and Rui Cai³

¹State Key Laboratory of Optoelectronic Materials and Technologies, School of Physics and Engineering, Sun Yat-sen University, Guangzhou 510275, China

²Materials Science Institute, PCFM Laboratory, School of Chemistry and Chemical Engineering, Sun Yat-sen University, Guangzhou 510275, China

³State Key Laboratory of Catalysis, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian 116023, China

Table S1 XPS data of CMK-3 and FDU-15.

Samples	Element	Peak B.E. *	At. %	C-O Peak Area	C-C Peak Area	C-O/C-C
CMK-3	C1s	284.8	95.6	5018.6	55476.3	9.1%
	O1s	533.1	4.4			
FDU-15	C1s	284.8	92.2	5823.2	55403.8	10.5%
	O1s	532.8	7.9			

*B.E.: binding energy

Table S2 TG data of Pt/CMK-3 and Pt/FDU-15.

Samples	Pt/CMK-3	Pt/FDU-15
100°C Weight	75.5%	89.7%
700°C Weight	15.3%	18.3%
Actual Pt loading	20.3%	20.4%

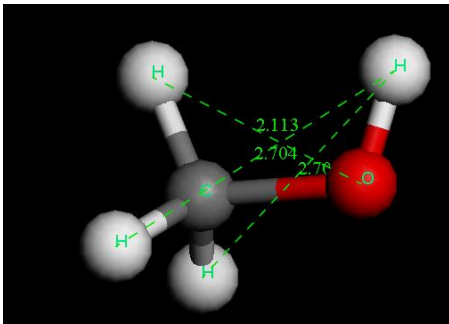
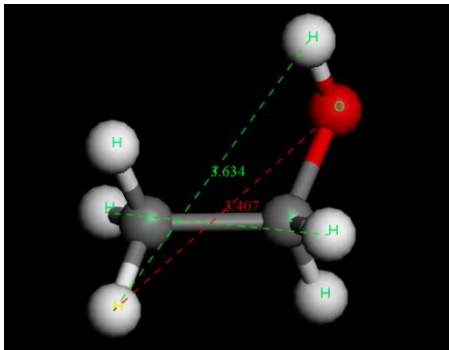
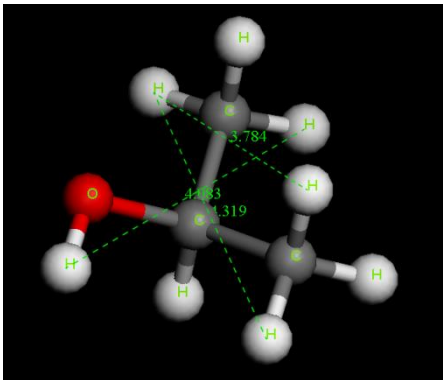
*Corresponding authors: stsssq@mail.sysu.edu.cn (S. Song), Tel&Fax: 86-20-84113253; wudc@mail.sysu.edu.cn (D. Wu), Tel&Fax: +86-20-84112759.

Table S3 Electrochemical activity of Pt/CMK-3 and Pt/FDU-15.

Samples	ESA ($\text{m}^2 \text{g}^{-1}$)	Peak current density (I_p) (mA cm^{-2})		
		$I_{p(\text{MOR})}$	$I_{p(\text{EOR})}$	$I_{p(\text{IPOR})}$
Pt/CMK-3	37.9	75.57	72.10	37.40
Pt/FDU-15	5.1	1.70	1.20	0.18
R*	7.4	44.5	60.1	207.8

*R is the ratio of the electrochemical activity (ESA) of Pt/CMK-3 to that of Pt/FDU-15.

Table S4 The calculated molecular size of methanol, ethanol, and isopropanol.

Alcohol molecule	The first three biggest interatomic distance (Å)			
	CH ₃ OH	2.704	2.704	2.113
	C ₂ H ₅ OH	3.634	3.407	3.082
	CH ₃ CH(OH)CH ₃	4.319	4.083	3.784