Experimental Section

AuPd/carbon catalysts were prepared through the incipient wetness method using aqueous solutions of $PdCl_2$ (Aldrich) and $HAuCl_4$•$3H_2O$ (Aldrich) of acid treated and untreated CMK-3 supports. The theoretical composition was 2.5 wt.% Au and 2.5 wt.% Pd.

Ordered CMK-3 carbon was refluxed in 2 M HNO3 at room temperature for 0.5 or 2 h in order to create surface oxygen groups in the acid treated CMK-3 sample.

An aqueous solution of $HAuCl_4$•$3H_2O$ [5 ml, 5 g dissolved in water (250 ml)] was mixed with an aqueous solution of $PdCl_2$ [2.08 ml, 1 g in water (25 ml)] at 80oC. This solution was added to the carbon (1.9 g). The paste formed was ground and dried at 80 ºC overnight and heated in flowing helium at 400ºC for 2 h with a flow of 30 ml/min. The texture and surface chemistry of mesoporous carbon were modified by means of different oxidation treatments in liquid phase to create functional groups. Textural properties of the treated and untreated carbons are reported in Table 1SI. Chemical Catalyst surface areas were determined from the N_2 adsorption isotherms at -196ºC. The data were treated in accordance with the BET method. $V_{mesopore}$ and d_{pore} were calculated using the BJH method to the desorption branch of the N_2 adsorption isotherm.

Ordered CMK-3 mesoporous carbons were synthesized using SBA-15 silica as template. Mesoporous silica SBA-15 was prepared from a triblock EO20PO70EO20 copolymer (Aldrich) and TEOS (Aldrich) as silica source as described elsewhere [P.F. Fulvio, S. Pikus and M. Jaroniec, J. Colloid Interf. Sci. 287 (2005), p. 717.]. In a typical synthesis of SBA-15, 10 g of triblock copolymer was added to 300 ml of an aqueous solution of 1.7 M hydrochloric acid and stirred at 50 °C for 2 h. Next, 20 g of TEOS was added dropwise and the mixture was stirred at the same temperature for 2 h. The synthesized gels were kept at 108 °C for 24 h under static conditions. The final products were filtered, washed with distilled water and dried firstly at room temperature for 24 h and secondly at 108 °C for 24 h. The synthesized samples were calcined under N_2 atmosphere at 500 °C.

Ordered CMK-3 mesoporous carbons were prepared by incipient wetness impregnation at room temperature of SBA-15 with a mixture of furan resin (Huttenes Albertus) and acetone (mass ratio resin:acetone = 5:1), and nitric acid was used as catalyst. Then, impregnated SBA-15 sample was cured at 108 °C for 1 day and carbonized at 700 °C for 3 h. A silica–carbon composite was obtained. Finally, samples were washed with 3 M NaOH to remove SBA-15 for 24 h and washed with distilled water. After that, carbon support was dried at 108 °C for 24 h.

Table 1. Textural properties obtained from N_2 adsorption isotherm data for AuPd catalysts and supports.

Materials[a]	Metal loading	Order	Treatment	S_{BET} [m^2 g^{-1}][b]	Vmesopore [cm^3g-1][d]	dpore [nm][d]
NORIT	-	Non ordered	Not treated	1300	0.44	4.6
AP	2.5%wt Au – 2.5%wt Pd	Non ordered	Not treated	980	0.53	4.5
NORIT20	-	Non ordered	2 wt.% HNO_3	1211	0.46	4.6
AP20	2.5%wt Au – 2.5%wt Pd	Non ordered	2 wt.% HNO_3	897	0.49	4.6
O	-	Ordered	Not treated	1163	0.80	3.3
APO	2.5%wt Au – 2.5%wt Pd	Ordered	Not treated	822	0.54	3.4
O20	-	Ordered	2 wt.% HNO_3	975	0.70	3.4
APO20	2.5%wt Au – 2.5%wt Pd	Ordered	2 wt.% HNO_3	860	0.54	3.4

[a] Catalysts and supports. [b] BET surface area from the N_2 adsorption isotherm. [c] calculated using the BJH method to the desorption branch of the N_2 adsorption isotherm.

Table 2. H_2O_2 production and decomposition over carbon supports and AuPd catalysts.

Carbon or catalyst and treatment	Productivity to H_2O_2 [$mmol_{H2O2}$ l^{-1}][a]	Decomposition of H_2O_2 [%][b]
NORIT	<0.1	0
NORIT20	<0.1	0
CMK-3 Not treated (O)	<0.1	0
CMK-3 2 wt.% HNO_3 (O20)	<0.1	0
AuPd/NORIT Not treated (AP)	11	49
AuPd/NORIT 2 wt.% HNO_3 (AP20)	19	15
AuPd/CMK-3 Not treated (APO)	15	36
AuPd/CMK-3 2 wt.% HNO_3 (APO20)	32	10

[a] Productivity to H_2O_2 after 60 min. [b] Decomposition of H_2O_2 after 60 min

Figure 1SI. Adsorption isotherms and pore size distribution of the different catalysts.

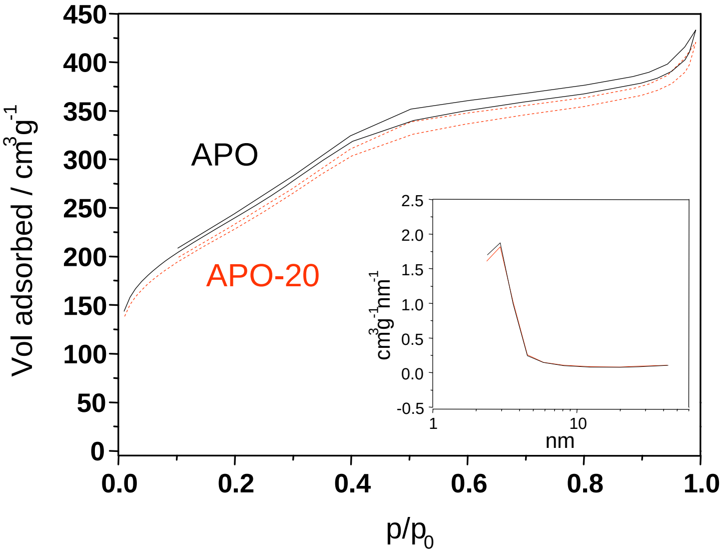

Figure 2SI. Low angle XRD of the different catalysts and supports.

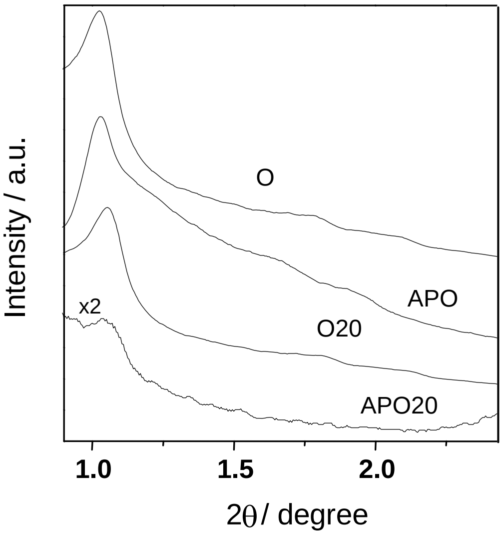

Figure 3SI. XRD pattern of the acid treated Au and AuPd catalysts.

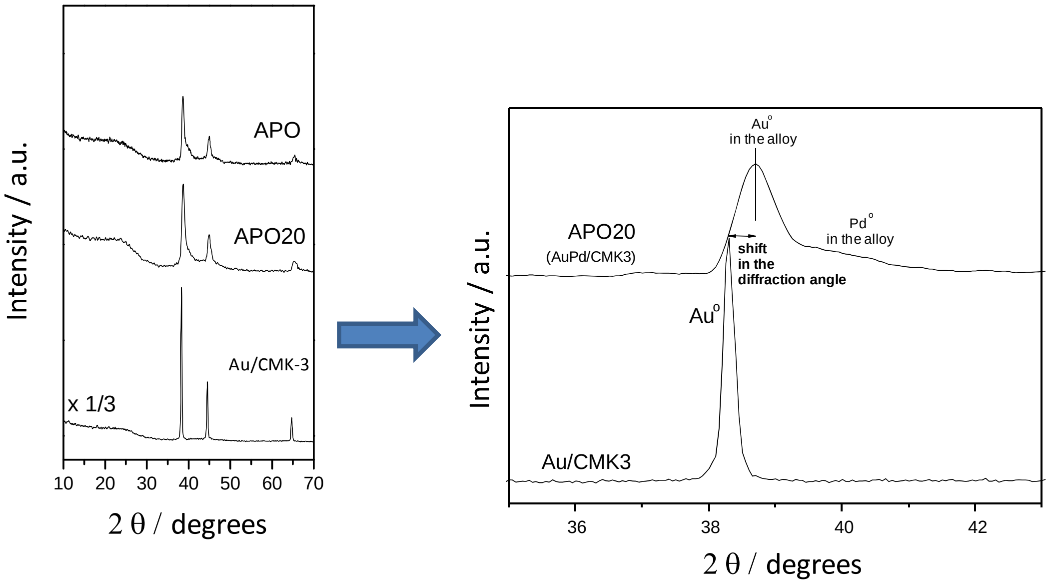

Figure 4SI. CO (a) and CO_2 (b) temperature programmed desorption profiles for the different catalysts and supports.