Supplementary Materials

A Study of Catalytic Oxidation of a Library of C_2 to C_4 Alcohols in the Presence of Nanogold

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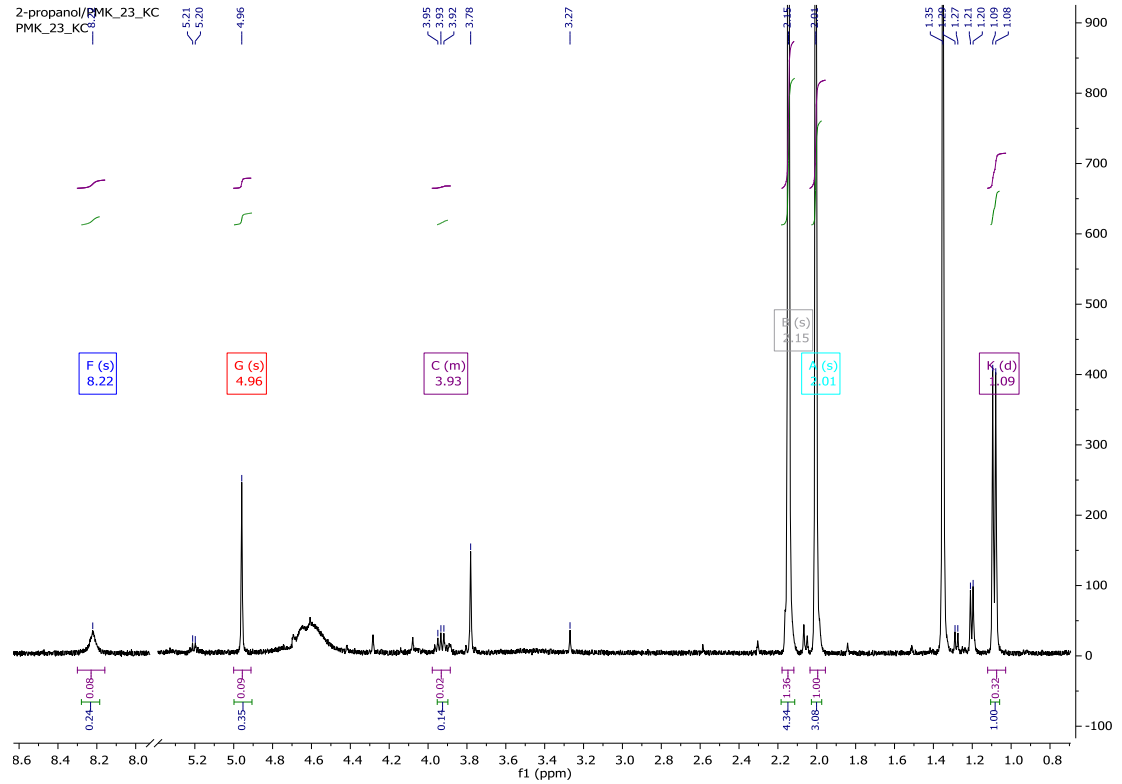
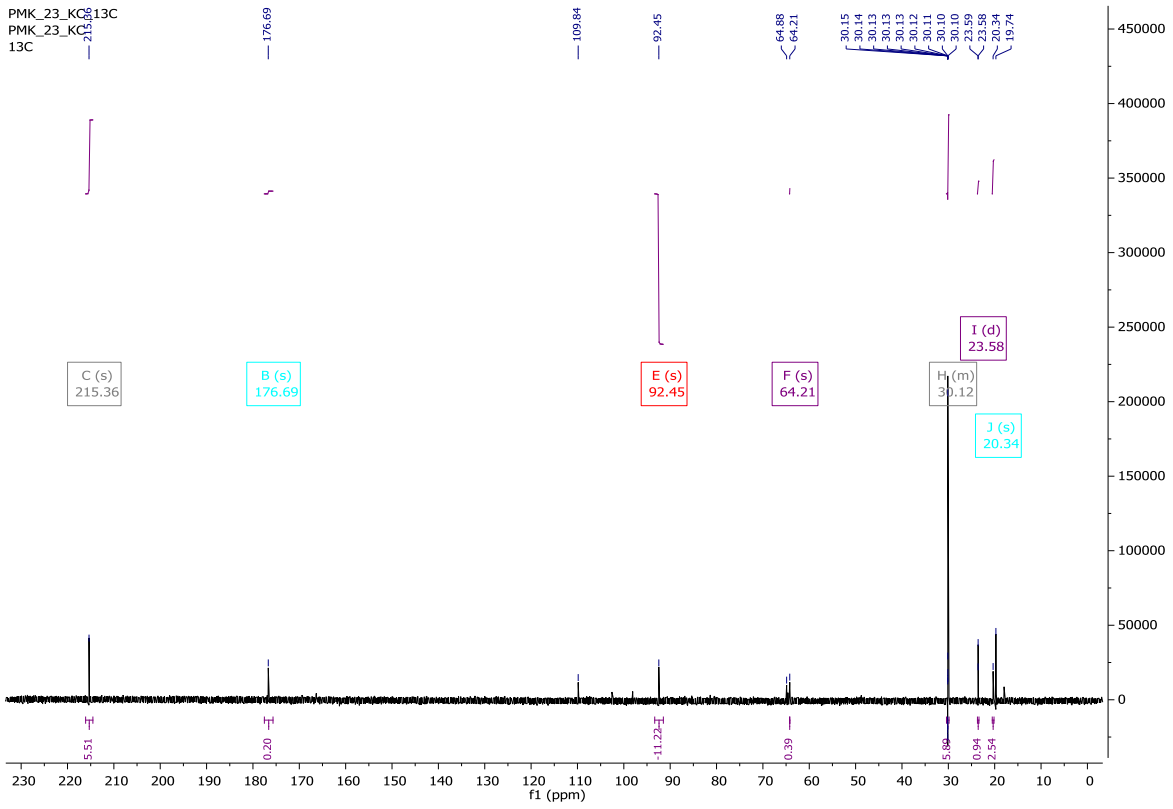
Table 1. The amount of the precursor (g) per 100 g of tetraethyl orthosilicate that was required for the syntheses of the catalysts in Experiment 2.1.1.

Catalyst	Nanometal content [mmol]		Amount of the precursor [g]	
	Au	Pd	30% $HAuCl_4$	$PdCl_2$
0.1% Au/SiO_2	0.147	-	0.166	-
0.7% Au/SiO_2	1.032	-	1.169	-
(1.1% Pd; 0.4% Au)/ SiO_2	0.595	3.026	0.673	0.5366
(0.2% Pd; 1.1% Au)/SiO_2	1.632	0.549	1.848	0.0974

A


2-propanol/PMK_23_KC
PMK_23_KC
F (s)
8.22
G (s)
4.96
C (m)
3.93
K (d)
1.09
f1 (ppm)

B


PMK_23_KC_13C
PMK_23_KC
13C
C (s)
215.36
B (s)
176.69
E (s)
92.45
F (s)
64.21
H (m)
30.12
I (d)
23.58
J (s)
20.34
f1 (ppm)

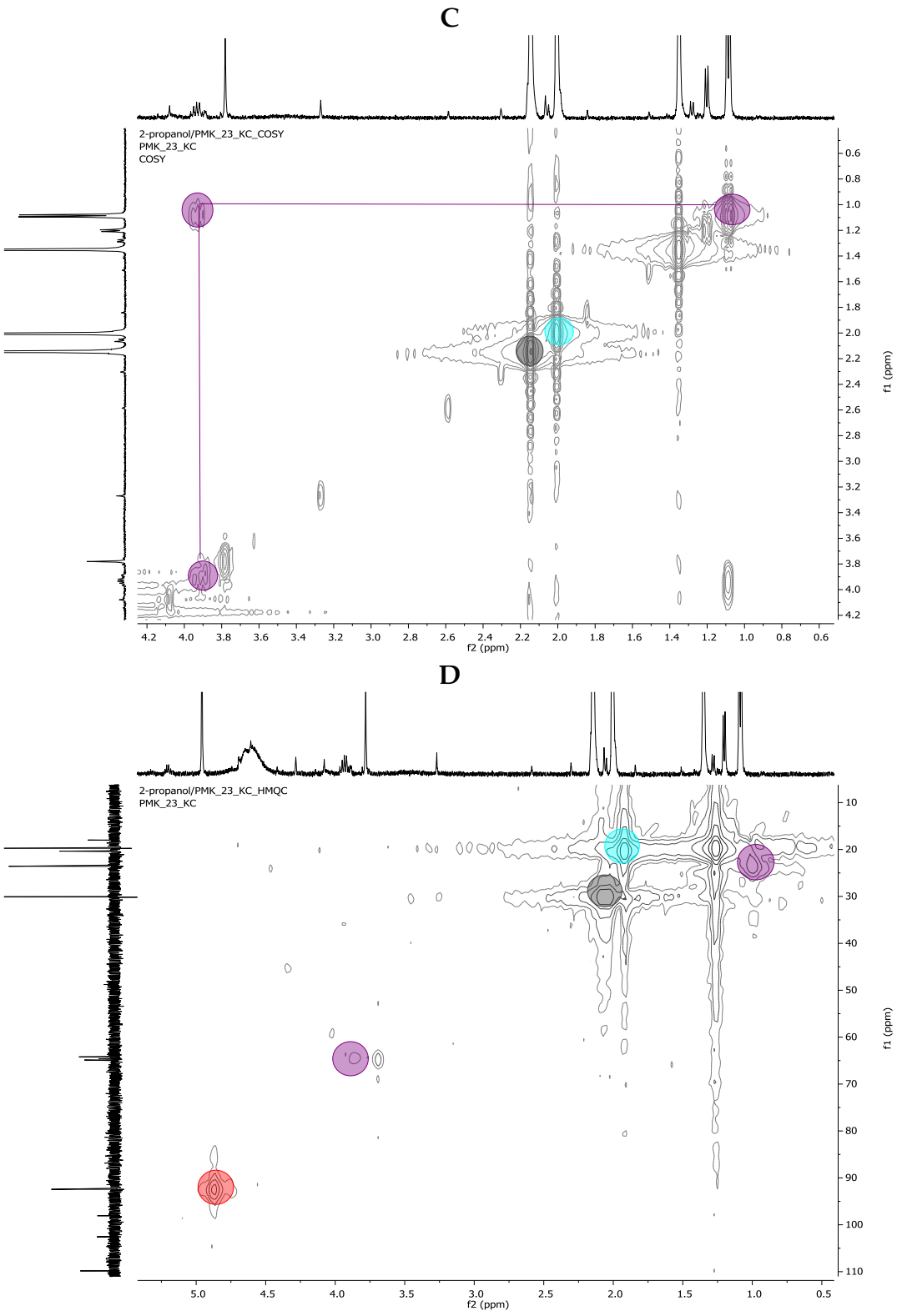
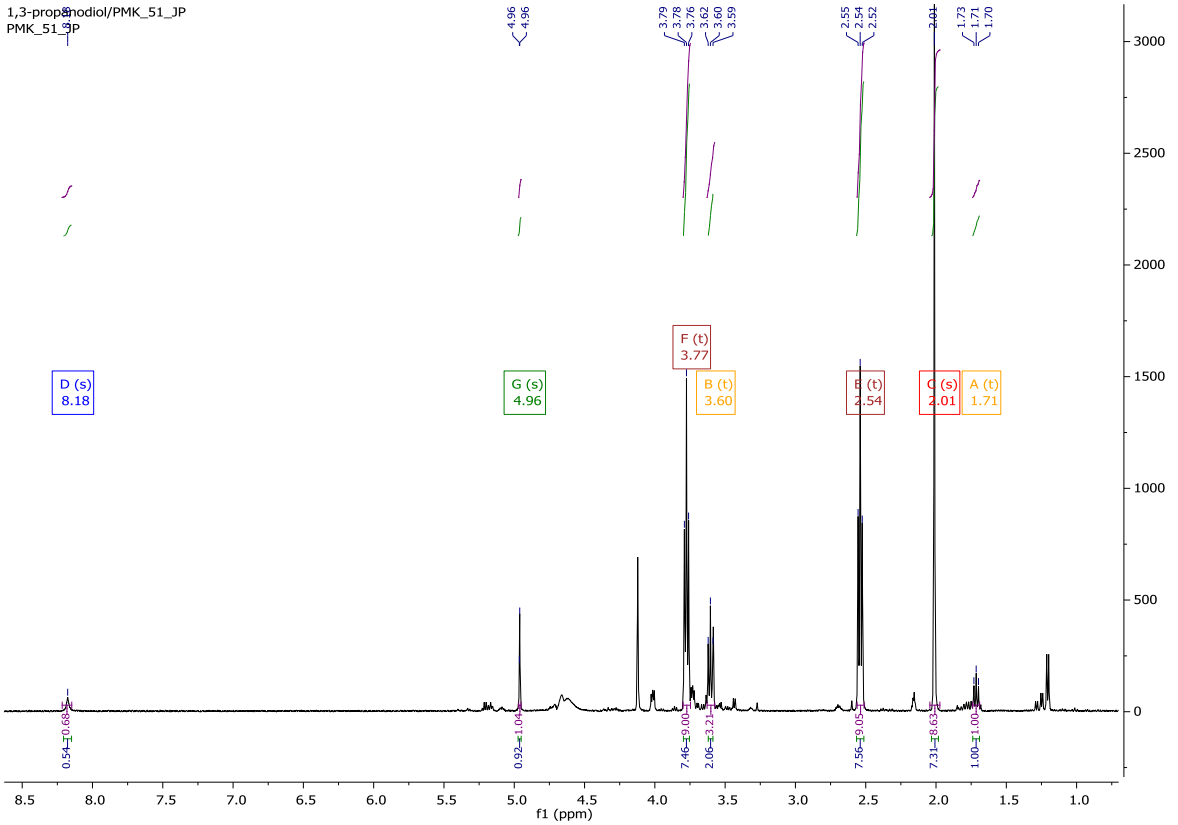
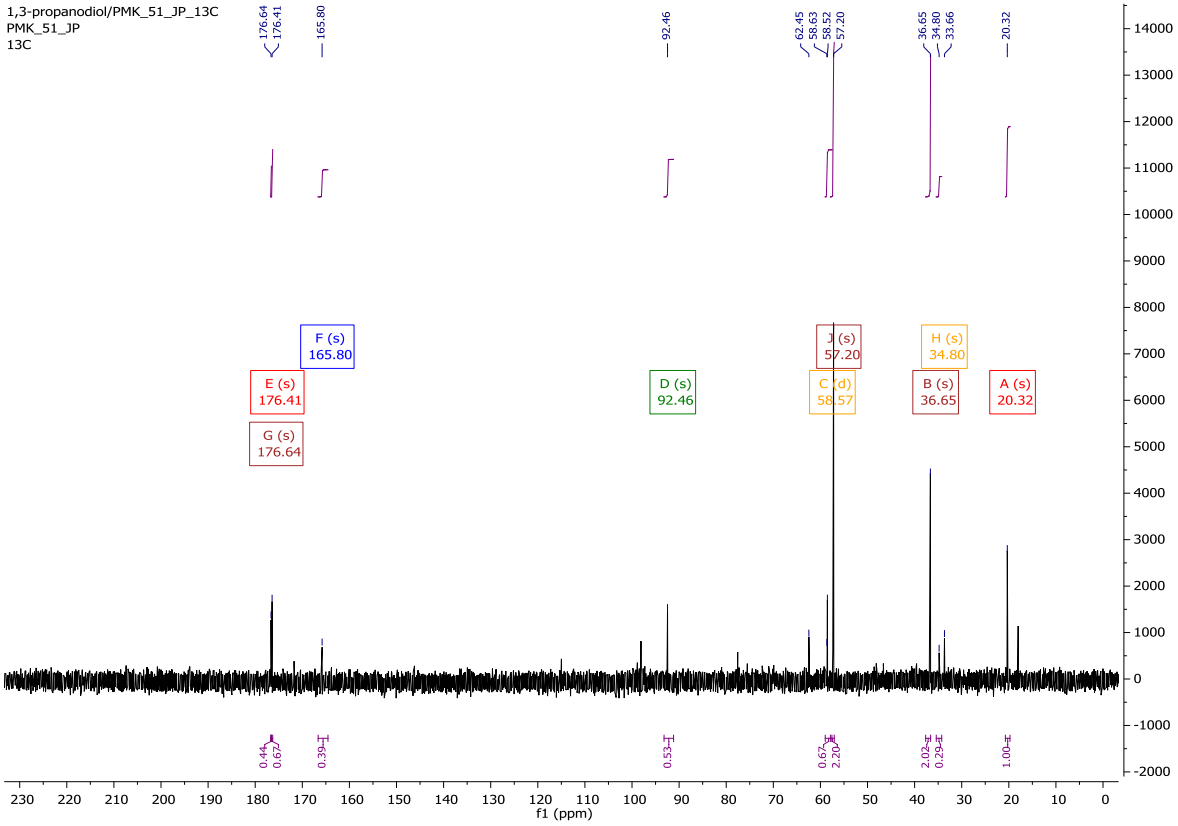


Figure 1. The ^{1}H NMR (**A**), ^{13}C NMR (**B**), COSY (**C**) and HMQC (**D**) spectra of the crude reaction mixture that was required for the oxidation of 2-propanol in the presence of 0.1% Au/SiO_2 under the reaction conditions as described in Experiment 2.3. Specific signals on the spectra are assigned to the products of the reaction, namely: ● 2-propanol, ● acetic acid, ● formic acid, ● acetone, ● 1,3,5-trioxane. Other products were not marked on the spectra. Measurements of the samples were taken in D_2O at Bruker 400 MHz.

A


1,3-propanodiol/PMK_51_JP
PMK_51_JP
D (s) 8.18
G (s) 4.96
F (t) 3.77
B (t) 3.60
B (t) 2.54
C (s) 2.01
A (t) 1.71
f1 (ppm)

B


1,3-propanodiol/PMK_51_JP_13C
PMK_51_JP
13C
F (s) 165.80
E (s) 176.41
G (s) 176.64
D (s) 92.46
J (s) 57.20
C (d) 58.57
H (s) 34.80
B (s) 36.65
A (s) 20.32
f1 (ppm)

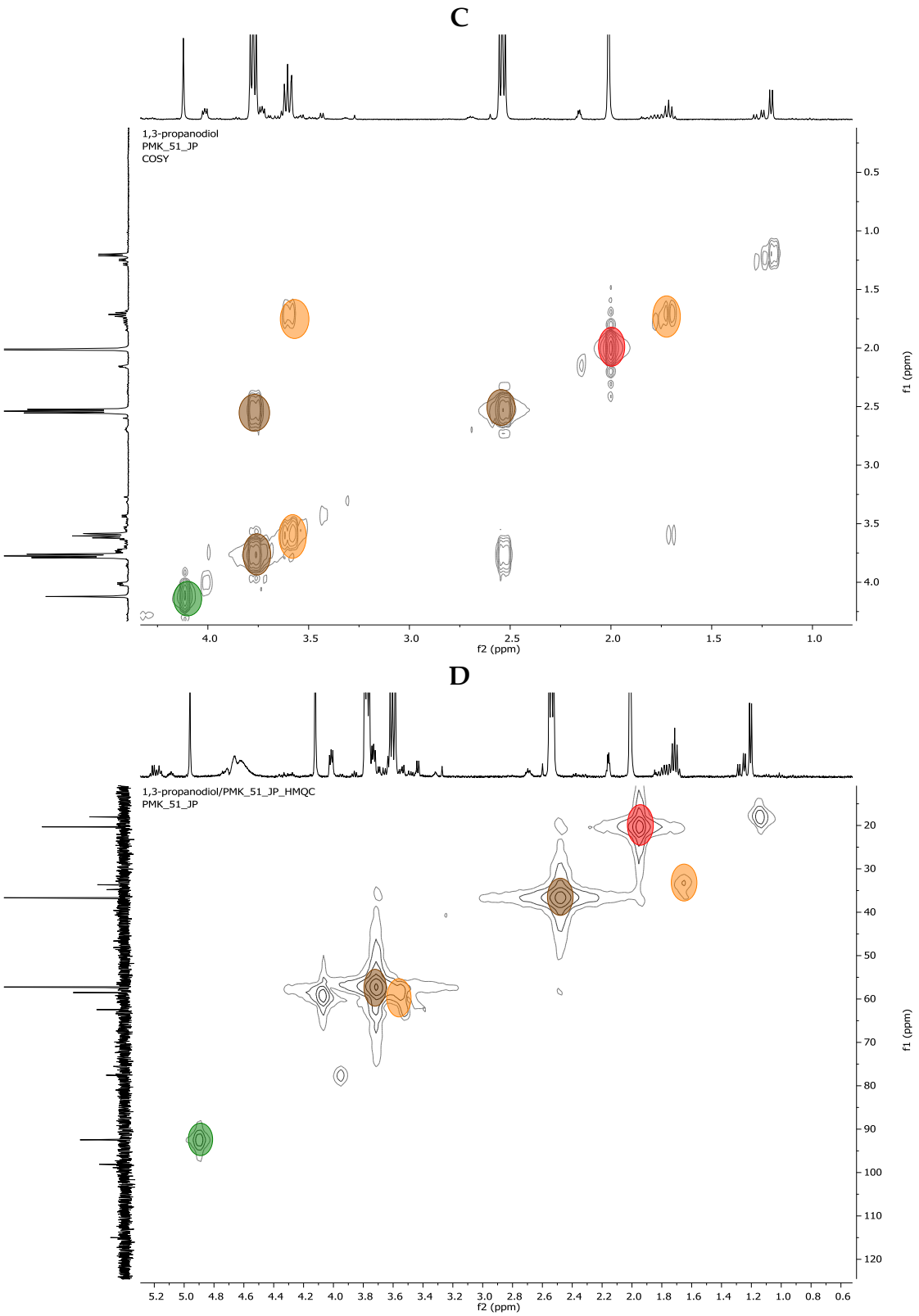


Figure 2. The ^{1}H NMR (**A**), ^{13}C NMR (**B**), COSY (**C**) and HMQC (**D**) spectra of the crude reaction mixture that was required for the catalytic oxidation of 1,3-propanediol in the presence of 0.1% Au/SiO_2 under the reaction conditions as described in Experiment 2.3. Specific signals on the spectra were assigned to the products of the reaction, namely: ● 1,2-propanediol, ● formic acid, ● acetic acid, ● 3-hydroxypropionic acid, ● 1,3,5-trioxane. Other products were not marked on the spectra. Measurements of the samples were taken in D_2O at Bruker 400 MHz.