Supporting Information

Conversion of Glycerol to Value Added Products in a Semi-Continuous Batch Reactor Using Noble Metals Supported on ZSM-11 Zeolite

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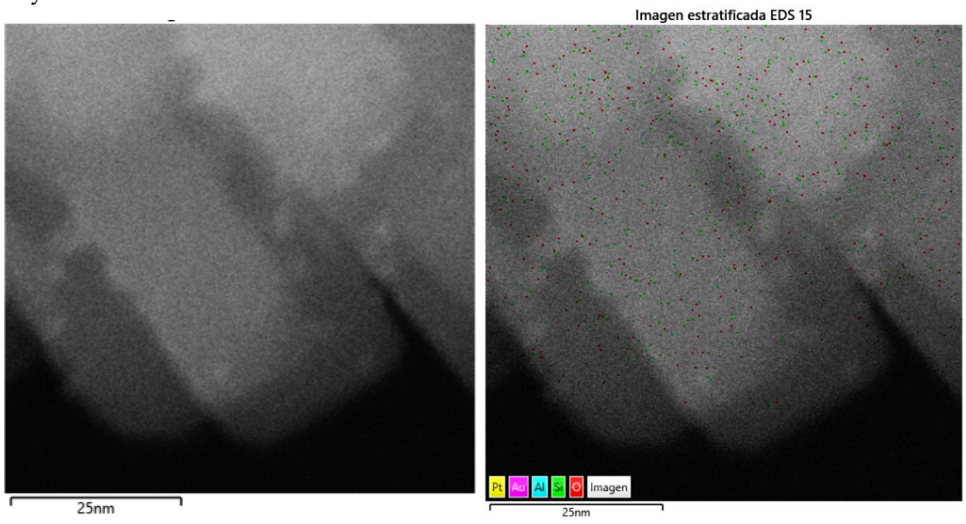
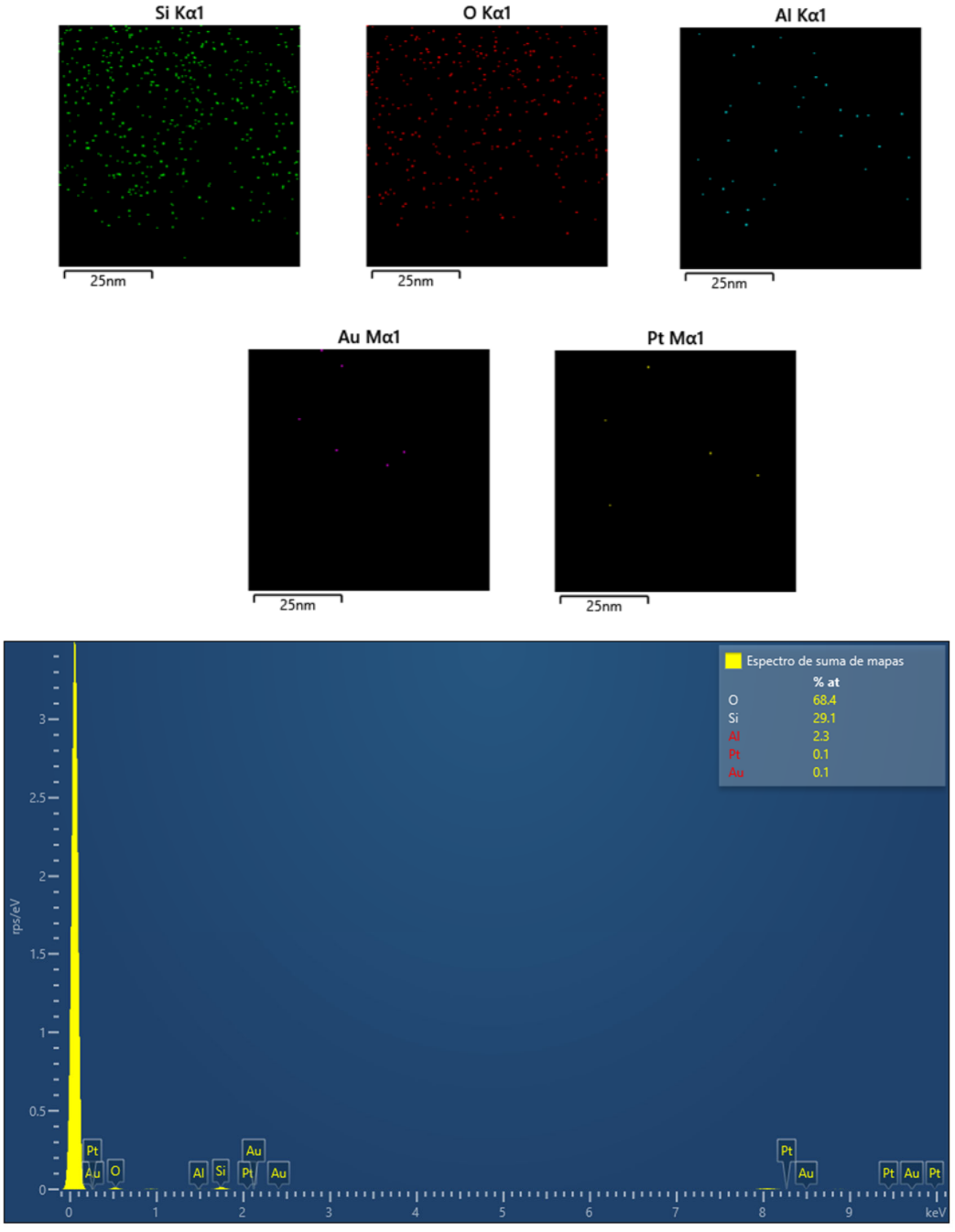
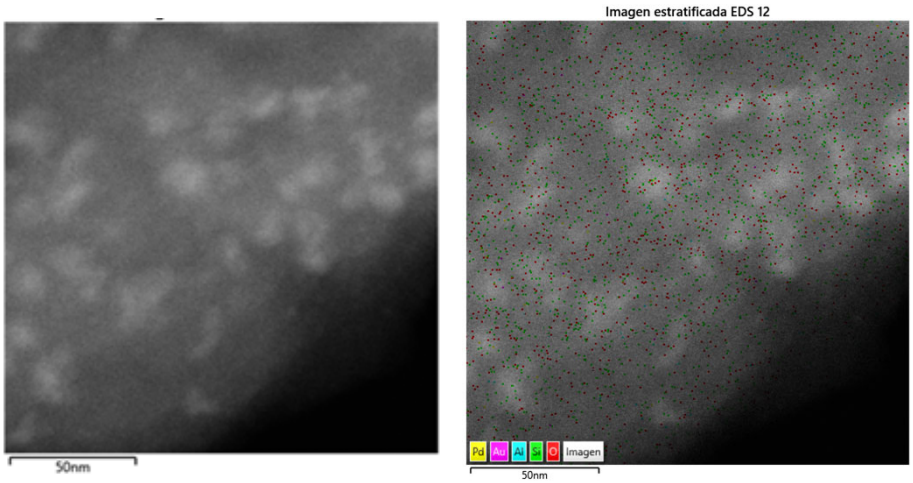
S1. TEM images, particle size distribution (**a**) and XEDS spectra (**b**) of the bimetallic catalyst Au-Pt- ZSM-11.



a)



S2. TEM images, particle size distribution (**a**) and XEDS spectra (**b**) of the bimetallic catalyst Au-Pd- ZSM-11.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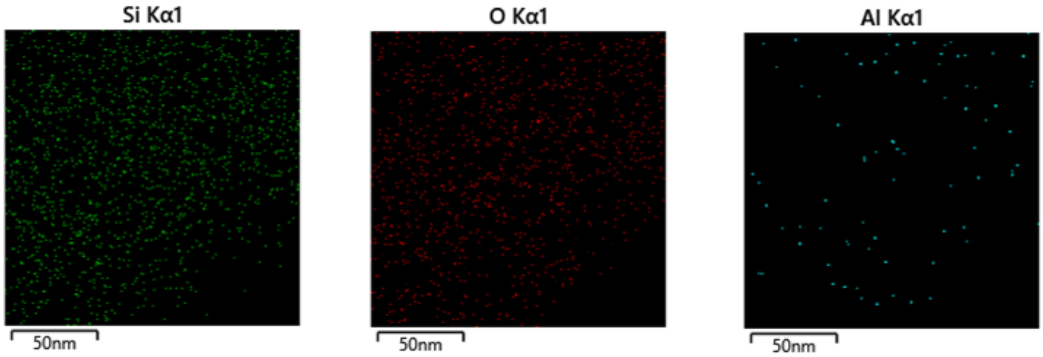
Pd
Au
Al
Si
O
Imagen
50nm

a)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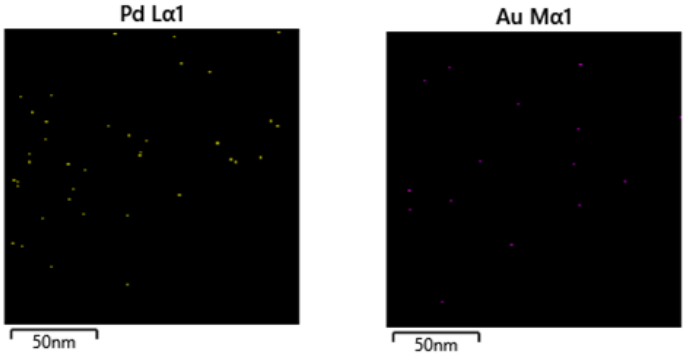
O Kα1
50nm
Al Kα1
50nm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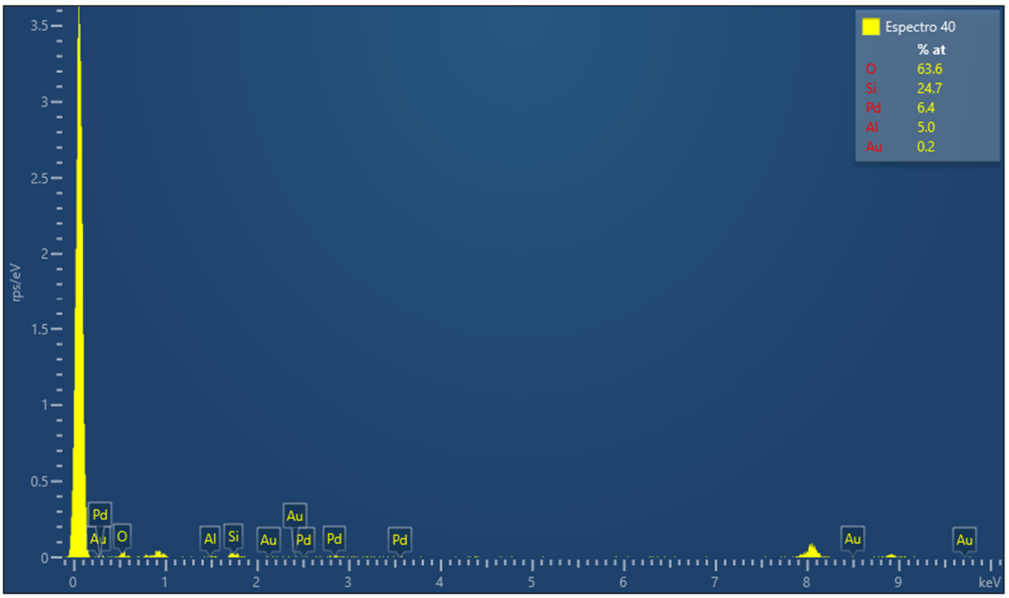
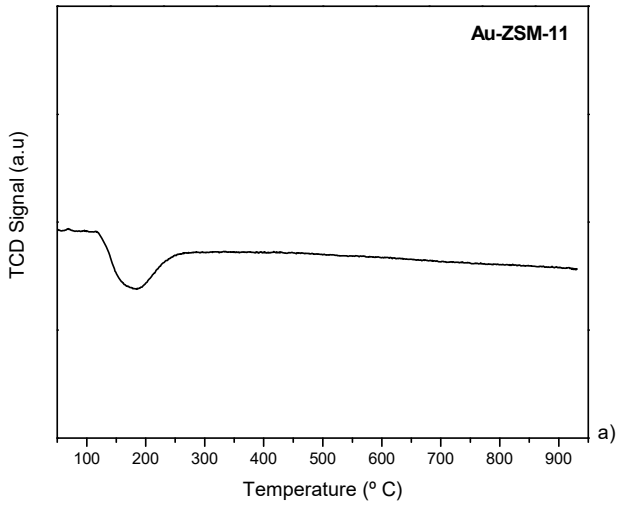
50nm
Au Mα1
50nm

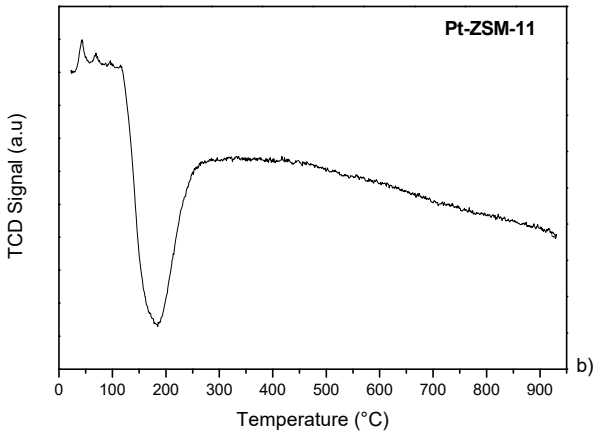


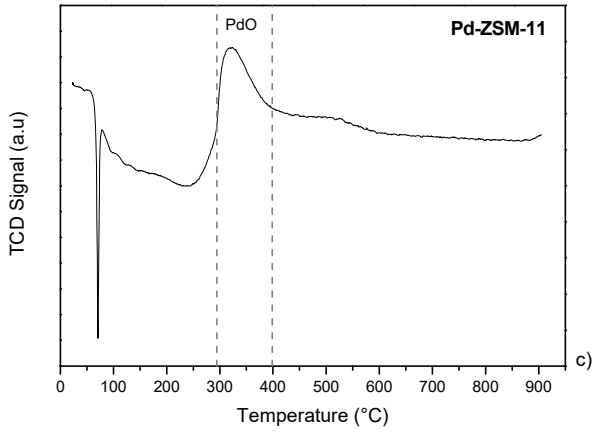
b)

S3. Temperature programmed reduction (TPR analysis) of monometallic catalysts (**a**) Au-ZSM-11, (**b**) Pt-ZSM-11, (**c**) Pd-ZSM-11.



a)





S4. GLY conversion and selectivity (mol.%) towards LA, GA and DHA over different Metal/ZSM-11.

At 60 min of reaction

Catalyst	Reaction Time (min)	GLY Conversion (mol%)	Selectivity (mol%)		
			LA	GA	DHA
Pt -ZSM-11 [a]	60	51.9	16.5	-	-
Pd-ZSM-11 [a]	60	36.9	-	71.9	-
Au-ZSM-11 [a]	60	46.8	-	41.4	-
Au-Pt-ZSM-11 [a]	60	16.8	8.9	20.5	-
Au-Pd-ZSM-11 [a]	60	16.0	7.3	19.5	-
Cu-ZSM-11 [b]	60	27.1	68.0	-	19.3
Cu-ZSM-11 (T) [b]	60	24.1	51.4	-	3.1
Cr-ZSM-11 [b]	60	13.7	-	-	11.4
Cr-ZSM-11 (T) [b]	60	23.8	10.2	-	18.1

At 120 min of reaction

Catalyst	Reaction Time (min)	GLY Conversion (mol%)	Selectivity (mol%)		
			LA	GA	DHA
Pt -ZSM-11 [a]	120	56.6	25.4	-	-
Pd-ZSM-11 [a]	120	32.8	-	63.9	-
Au-ZSM-11 [a]	120	48.4	-	48.5	-
Au-Pt-ZSM-11 [a]	120	21.0	36.9	25.1	-
Au-Pd-ZSM-11 [a]	120	16.0	12.2	22.5	-
Cu-ZSM-11 [b]	120	42.5	49.0	-	25.2
Cu-ZSM-11 (T) [b]	120	31.5	41.5	-	5.0
Cr-ZSM-11 [b]	120	40.6	-	-	28.3
Cr-ZSM-11 (T) [b]	120	42.5	5.3	-	27.5

a- Reaction conditions: 35 mL sol. GLY (0.25 M), NaOH/GLY = 2 (mol/mol), GLY/metal = 400 (g/g), at 70 °C and atmospheric pressure.

b- Reaction conditions: 30 mL sol. GLY (0.5 M), H_2O_2/GLY = 2 (mol/mol), GLY/metal = 230 (g/g), at 60 ºC and atmospheric pressure.

S5. GLY conversion and selectivity (mol%) towards majority products over different noble metals supports.

Catalyst	Reaction Condition	X_{GLY} (%)	S_{GA} (%)	S_{DHA} (%)	Ref.
Au/C	Sol. GLY (0.3 M, 30 mL), T= 100 °C, 11 bar O_2, NaOH/GLY = 2 (mol/mol), t= 0.5 h	6.8	67	-	[1]
Pd/C		29	83	-	[1]
Pt/C		16	70	-	[1]
Pt/AC	Sol. GLY (0.3M, 50 mL), T= 60 °C, 150 mL/min O_2, t = 6 h	50	47.4	-	[2]
Pt/CNTs	Sol. GLY (0.1 M, 50 g), T= 60 °C, 150 mL/min O_2, 600 rpm	22	19.5	10.4	[3]
Pd-Au/C	Sol. GLY (5%w/w, 20 g), T= 80 °C, 0.3 Mpa O_2, t = 4 h	6.1	-	47.8	[4]
Au-Pt/MgO	Sol. GLY (0.3 M, 15 mL), T = 80 °C, 300 KPa O_2, t = 4 h, GLY/metal = 1000 (mol/mol)	45	40	-	[5]
Au-Pt/SiO_2	Sol. GLY (0.3 M), T= 80 °C, 3 atm O_2 GLY/metal = 500 mol/mol	30	61	18	[6]

X: conversion of GLY ; S: Selectivity

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