

Supporting Information

Efficient Preparation of Nanocatalysts Case Study: Green Synthesis of Supported Pt Nanoparticles by Using Microemulsions and Mangosteen Peel Extract

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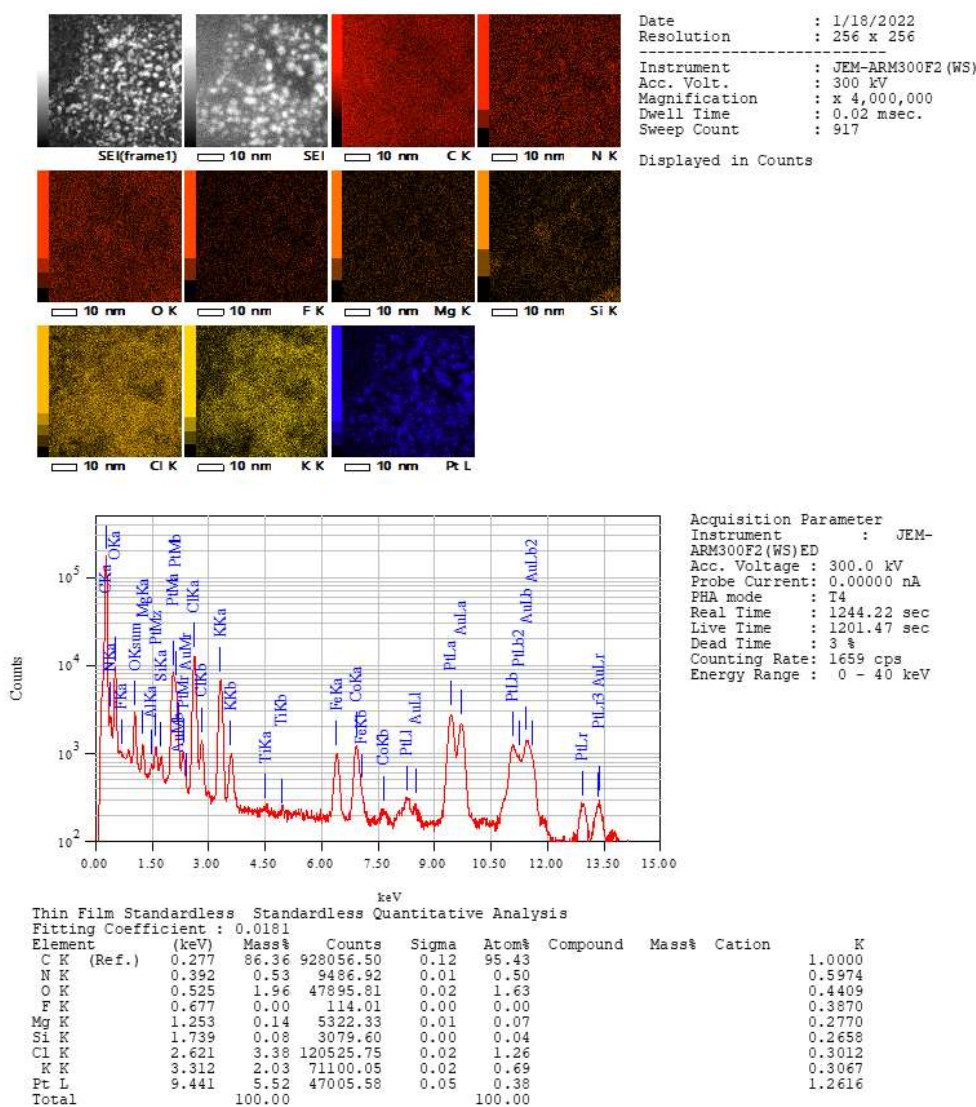
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1. The complete TEM and EDX analysis of Pt NPs after synthesized by microemulsions

View002 – Pt Mango vol 1:5

JEOL EDS 1/1



Note: specimen is changing over time.

Particles merge and a C-contamination layer spreads over the ROI (compare SEI(frame1) with SEI).

SEI (frame1) = before the EDX-acquisition --- SEI = last image of the EDX-acquisition

JED-2300 AnalysisStation

JEOL

Fig. S1 Complete TEM - EDX investigation of Pt NPs in the microemulsion before deposited on Al₂O₃

2. Anova Tables for the Yield and Activity of Pt/Al₂O₃

The significant factors that affect the Yield are A, B and the CD interactions, where A, B, C and D are amount of Pt in precursor, amount of reductant, synthesis time, and mass fraction of surfactant, respectively.

Table 1. Analysis of Variance for Yield with $\alpha = 0.05$

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Model	14	2593.38	185.241	2.29	0.057
Linear	4	1750.45	437.612	5.41	0.006
A	1	989.15	989.146	12.22	0.003
B	1	454.67	454.673	5.62	0.031
C	1	218.60	218.599	2.70	0.120
D	1	88.03	88.029	1.09	0.312
Square	4	0.00	0.000	0.00	1.000
A*A	1	0.00	0.000	0.00	1.000
B*B	1	0.00	0.000	0.00	1.000
C*C	1	0.00	0.000	0.00	1.000
D*D	1	0.00	0.000	0.00	1.000
2-Way Interaction	6	842.93	140.489	1.74	0.177
A*B	1	155.88	155.875	1.93	0.184
A*C	1	246.96	246.961	3.05	0.100
A*D	1	5.19	5.187	0.06	0.803
B*C	1	23.16	23.160	0.29	0.600
B*D	1	48.70	48.703	0.60	0.449
C*D	1	363.05	363.045	4.49	0.050
Error	16	1294.60	80.913		
Total	30	3887.98			

The significant factors that affect the Pt Activity are A, B and the AD and BD interactions, where A, B, C and D are amount of Pt in precursor, amount of reductant, synthesis time, and mass fraction of surfactant, respectively.

Table 2. Analysis of Variance for Activity with $\alpha = 0.05$

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Model	14	14345759	1024697	4.52	0.003
Linear	4	9689018	2422255	10.68	0.000
A	1	7746048	7746048	34.16	0.000
B	1	1846802	1846802	8.14	0.011
C	1	93150	93150	0.41	0.531
D	1	3019	3019	0.01	0.910
Square	4	0	0	0.00	1.000
A*A	1	0	0	0.00	1.000
B*B	1	0	0	0.00	1.000
C*C	1	0	0	0.00	1.000
D*D	1	0	0	0.00	1.000
2-Way Interaction	6	4656741	776123	3.42	0.023
A*B	1	422500	422500	1.86	0.191
A*C	1	209764	209764	0.93	0.350
A*D	1	1365392	1365392	6.02	0.026
B*C	1	379764	379764	1.67	0.214
B*D	1	1795600	1795600	7.92	0.012
C*D	1	483720	483720	2.13	0.163
Error	16	3627961	226748		
Total	30	17973720			

2. FTIR analysis of Al_2O_3 , $\text{Pt}/\text{Al}_2\text{O}_3$ and the Mangosteen Peel

The absence of any residual organic species on the Pt catalyst was confirmed by the FTIR analysis

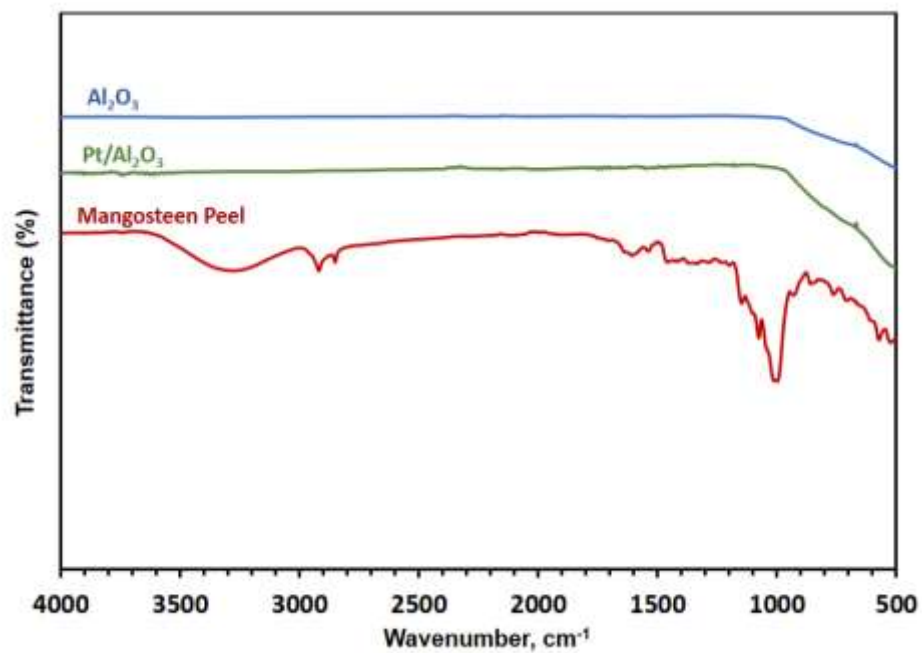


Fig. S2 FTIR analysis of Al_2O_3 , $\text{Pt}/\text{Al}_2\text{O}_3$ and the Mangosteen Peel