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APPENDICES

Appendix A Calibration Curve of Gas Products

The relationship between the peak area from GC analysis and the gas concentration was conducted for the possible gas products such as hydrogen, carbon dioxide, carbon monoxide, oxygen and methane.

Hydrogen (H₂)

Peak Area	Amount (%mole, %vol.)
0	0
20805	22.08
44763	36.09
65946.5	45.90
84113.5	53.08

Carbon monoxide (CO)

Peak Area	Amount (%mole, %vol.)
0	0
194855.5	2.51
288184	3.86
379866.5	4.77
443060.5	5.46

Carbon dioxide (CO₂)

Peak Area	Amount (%mole, %vol.)
0	0
615952.5	6.37
928586.5	9.73
1055156.25	11.24
1191626.25	12.40

Oxygen (O₂)

Peak Area	Amount (%mole, %vol.)
0	0
545988	7.43
842325.5	14.30
1091849	16.45
1442807	23.17

Methane (CH₄)

Peak Area	Amount (%mole, %vol.)
0	0
987137	15.05
1627523.5	29.09
2849792.5	33.56
2759228	39.82

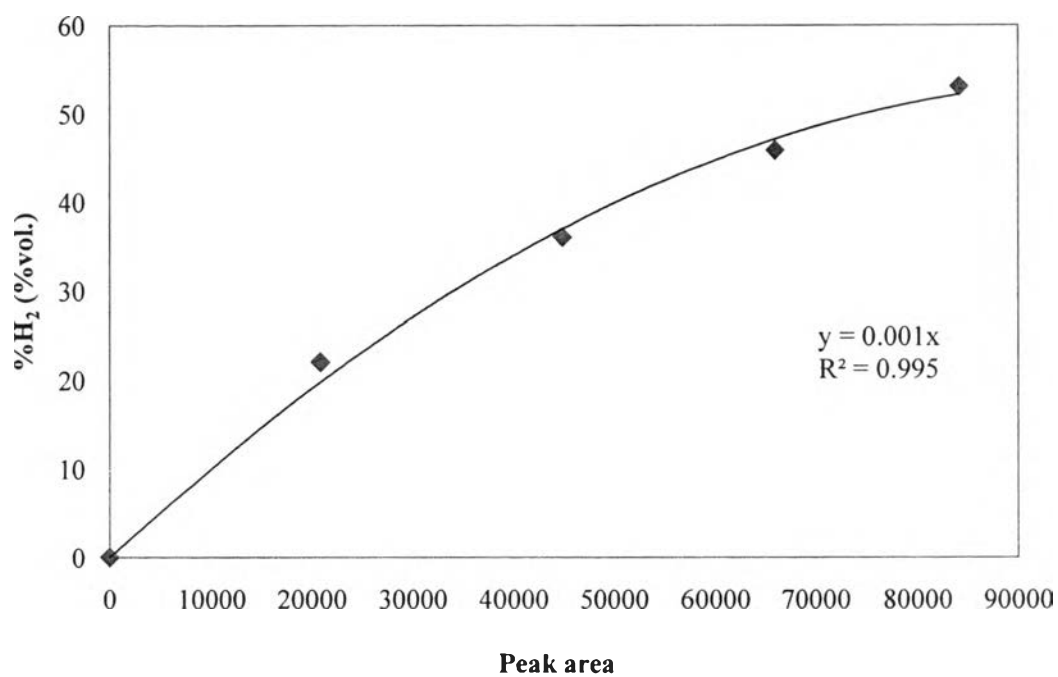


Figure A1 Calibration curve of hydrogen gas.

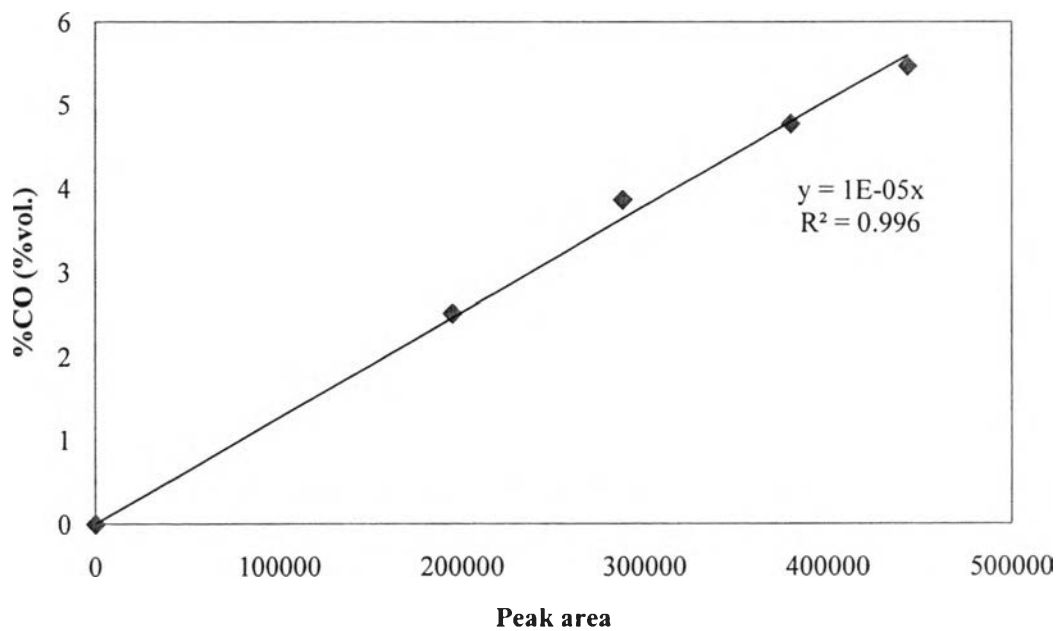


Figure A2 Calibration curve of carbon monoxide gas.

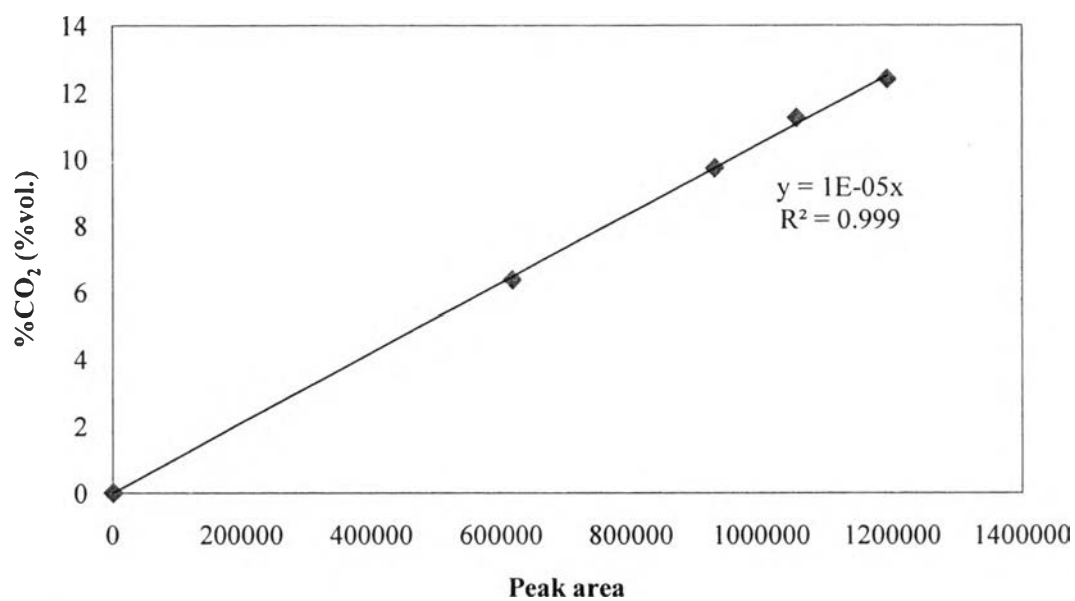


Figure A3 Calibration curve of carbon dioxide gas.

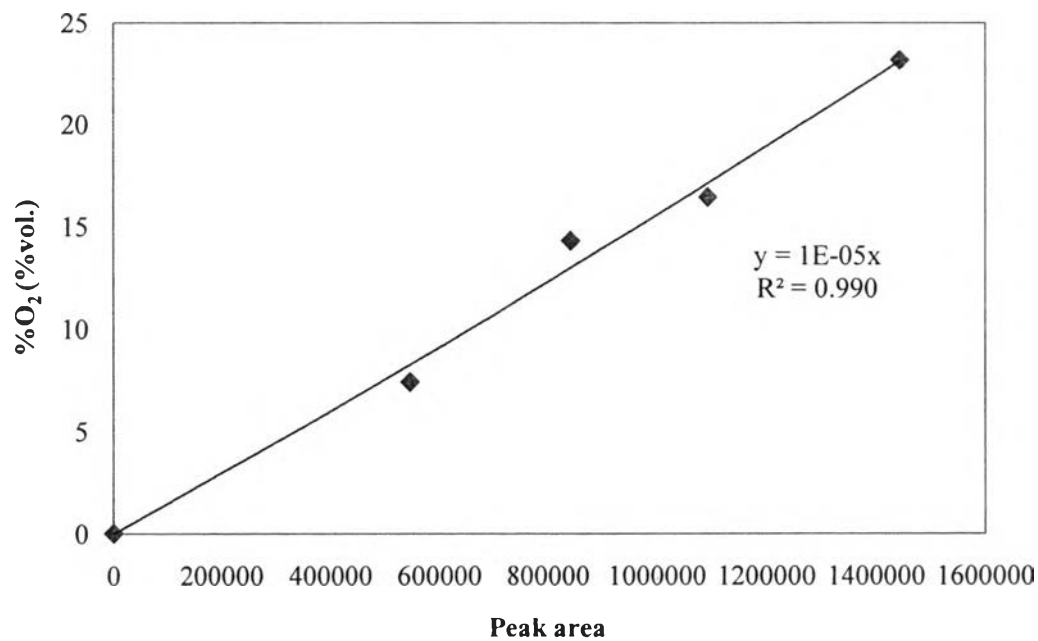


Figure A4 Calibration curve of oxygen gas.

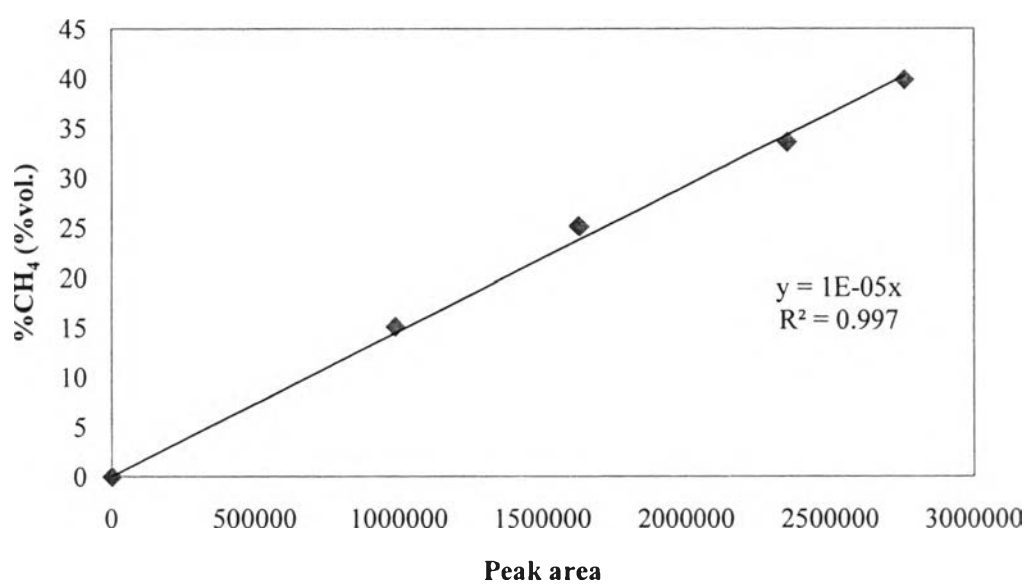


Figure A5 Calibration curve of methane gas.

Where x is peak area from GC analysis

y is concentration (%)

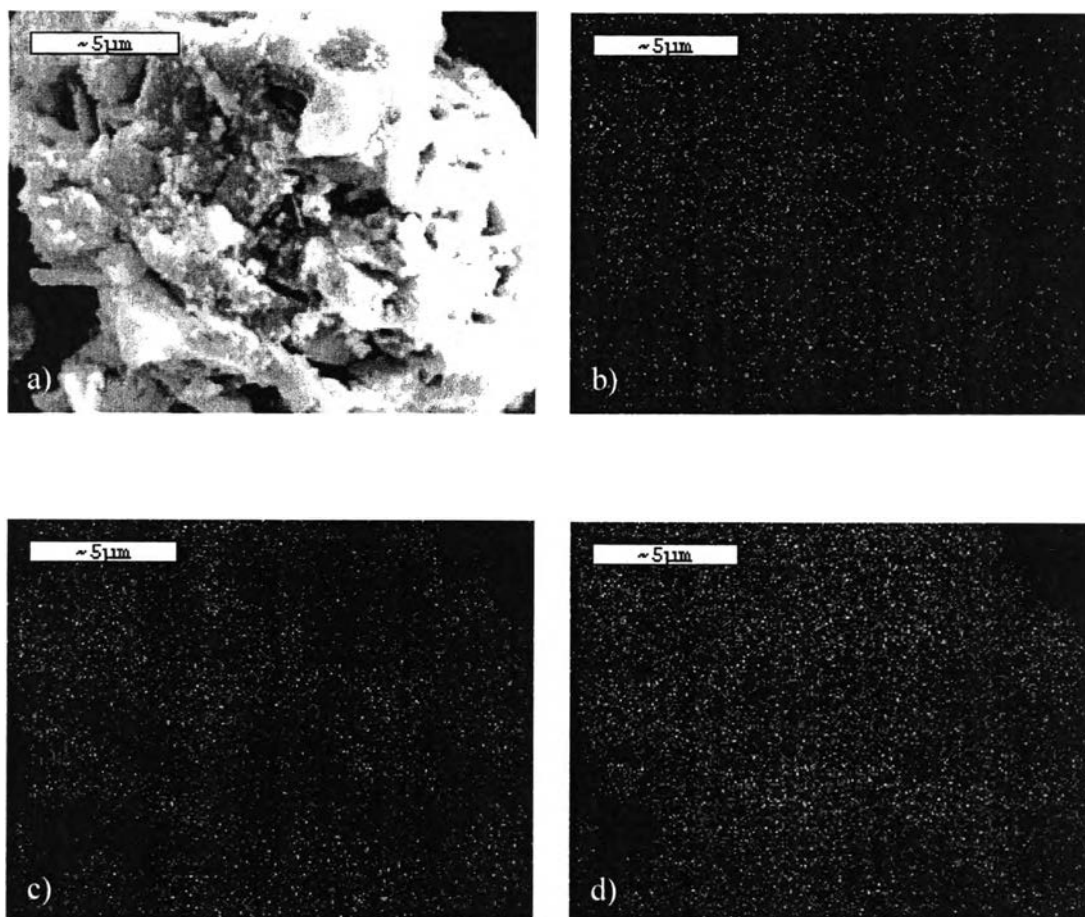
Appendix B SEM-eds of 3 wt% Au/CF(0.25)

Figure B1 SEM-eds of 3 wt% Au/CF(0.25): (a) SEM image of 3 wt% Au/CF(0.25), (b) mapping of Au, (c) mapping of Ce, and (d) mapping of Fe.

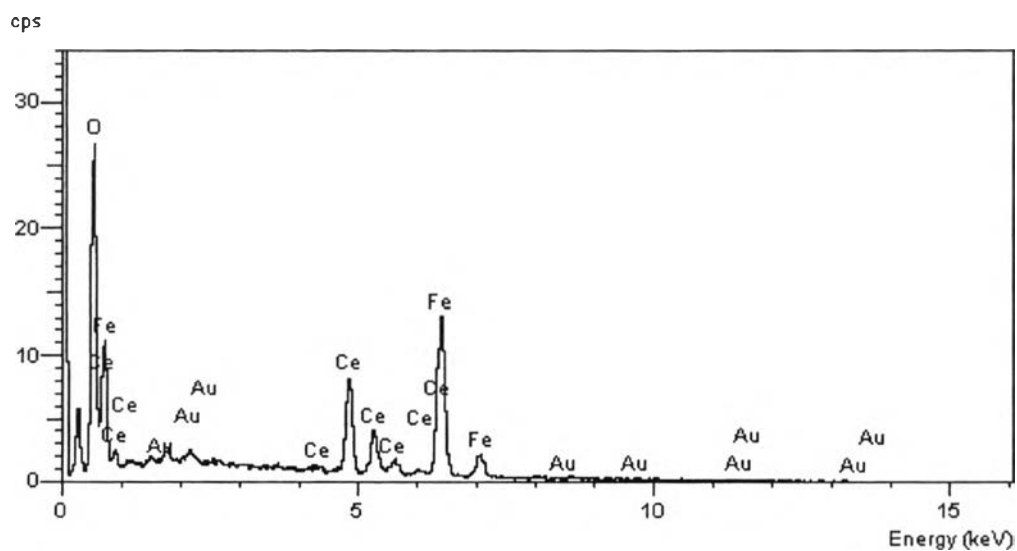


Figure B2 Composition of 3 wt% Au/CF(0.25).

Table B1 Composition of 3 wt% Au/CF(0.25)

No.	Au (%weight)	% Atomic		Ce/(Ce+Fe) atomic ratio
		Ce	Fe	
1	2.65	24.89	73.76	0.25
2	5.44	29.12	68.12	0.30
3	3.37	24.98	73.31	0.25
4	3.07	24.25	74.19	0.25
5	4.12	22.84	75.07	0.23
Average	3.73	25.22	72.89	0.26

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2. Umpawan, S., Apanee, L., and Erdogan, G. (2012, April 24) Hydrogen Production from Oxidative Steam Reforming of Methanol over Au/CeO₂–Fe₂O₃ Catalysts. Poster present at The 3rd Research Symposium on Petrochemical and Materials Technology and The 18th PPC Symposium on Petroleum, Petrochemicals, and Polymers, Bangkok, Thailand.

