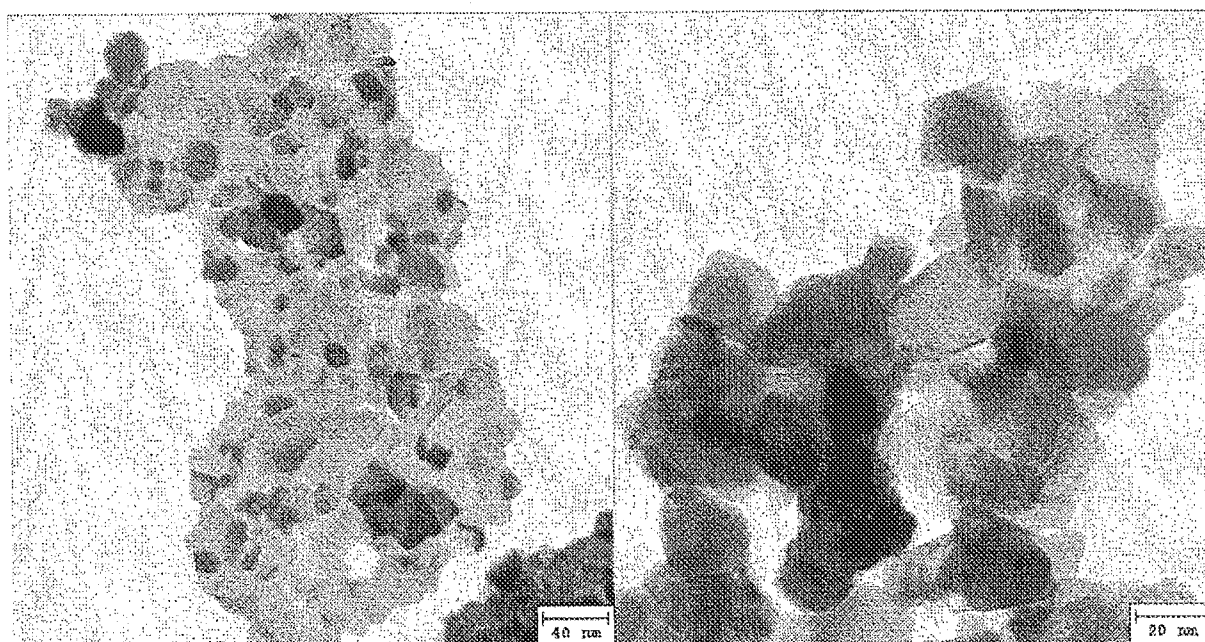
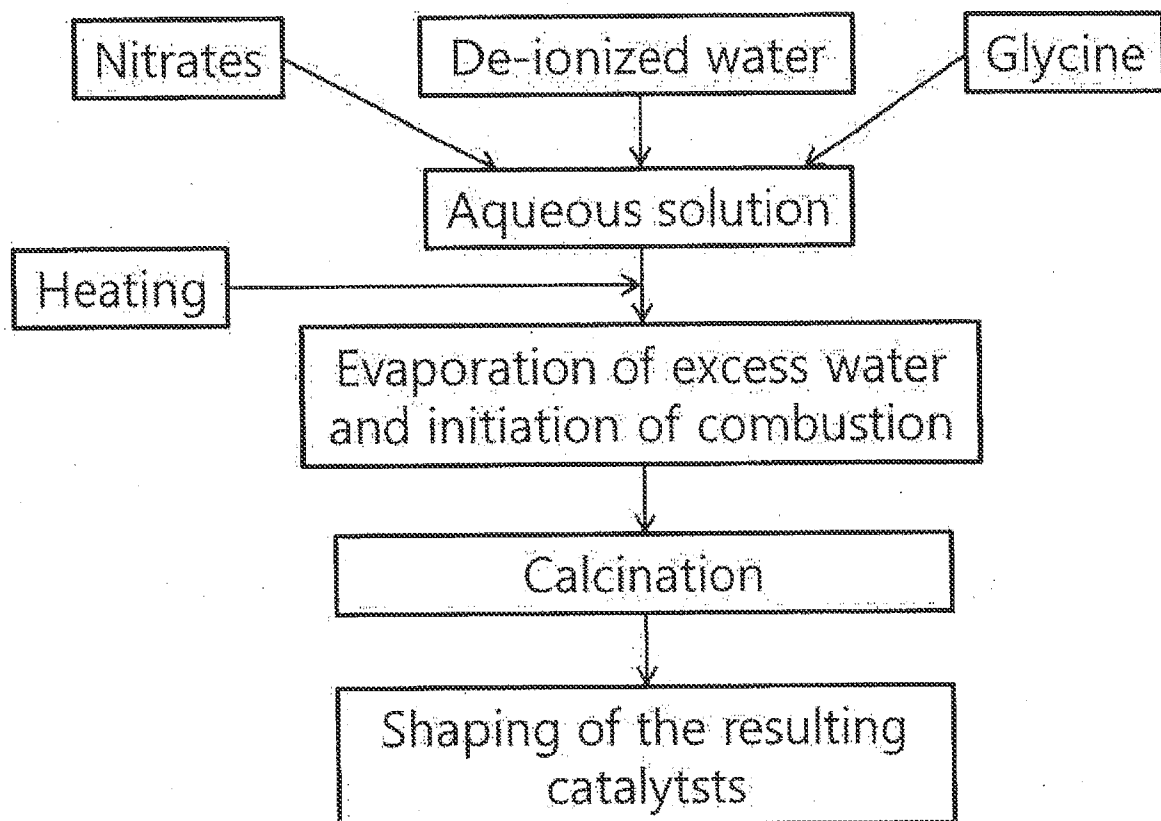


Figure 1



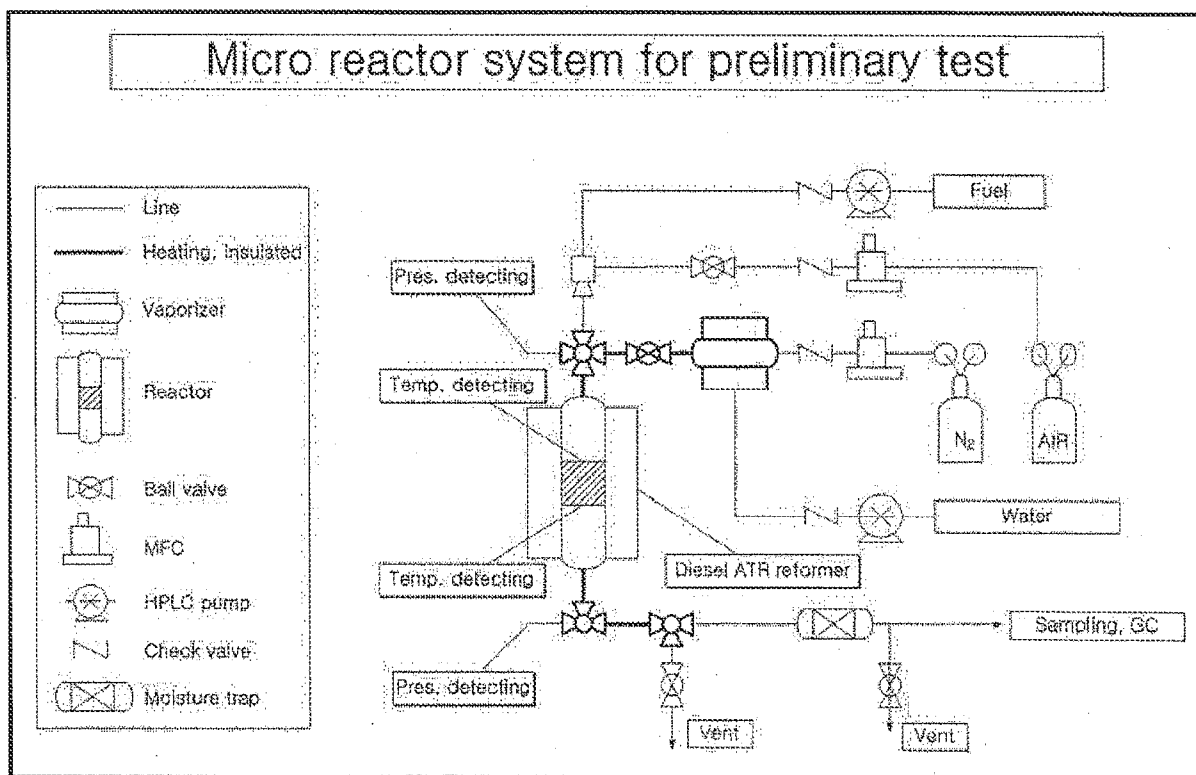
TEM images of Ni/CGO

Figure 2



Schematic flowchart of preparation method

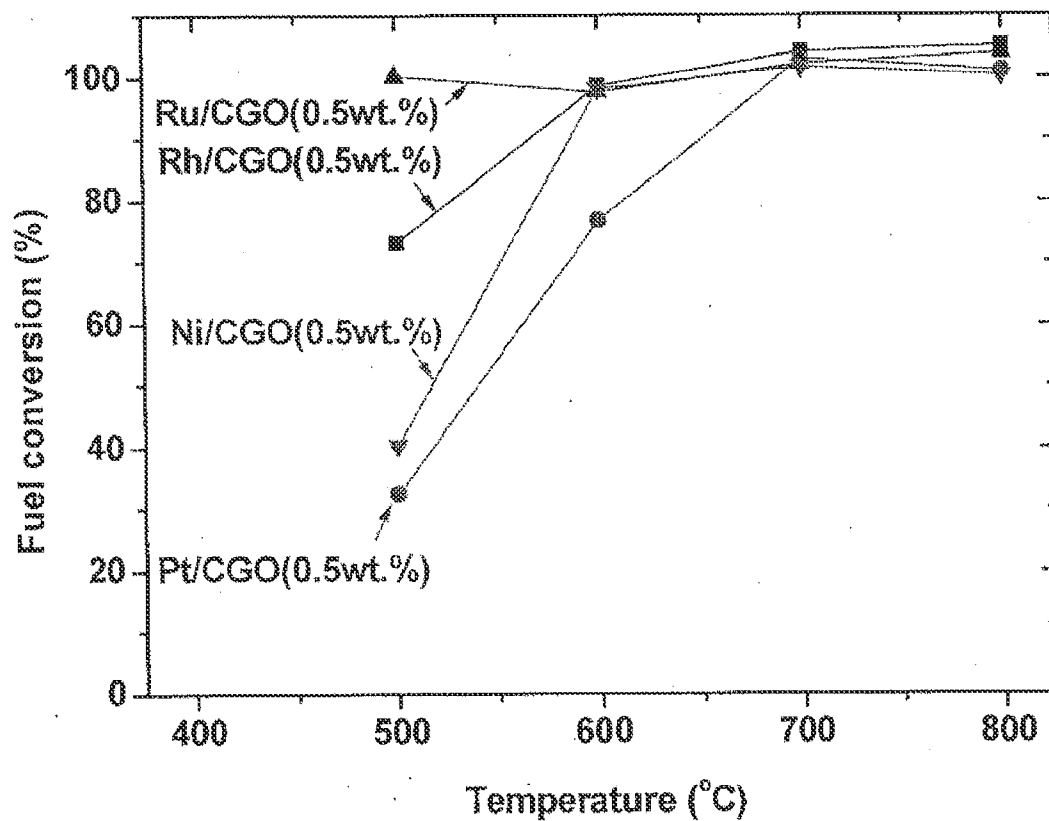
Figure 3



Schematic diagram of experimental setup for catalytic activity

Figure 4(a)

Fuel: n-dodecane, O_2/C : 0.3, H_2O/C : 3.0, GHSV: 5,000/h

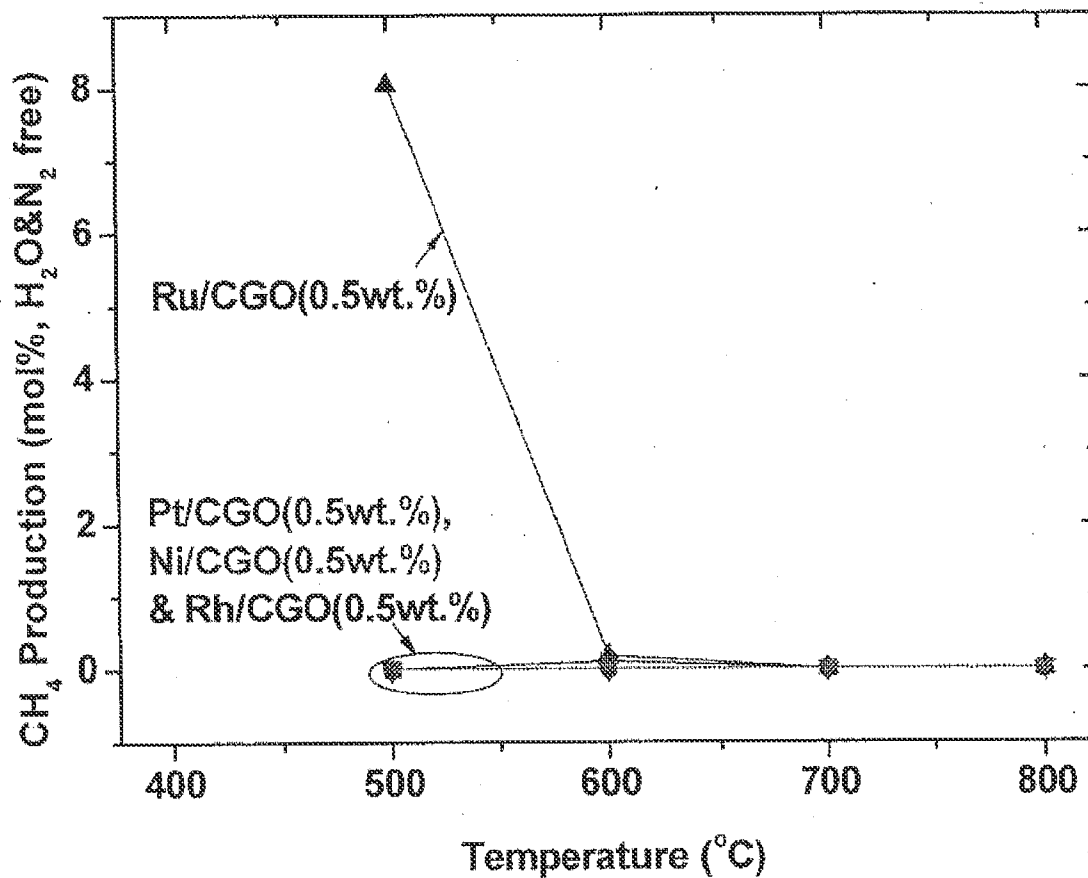


(a)

Fuel conversion and CH_4 production over mono-metallic catalysts

Figure 4(b)

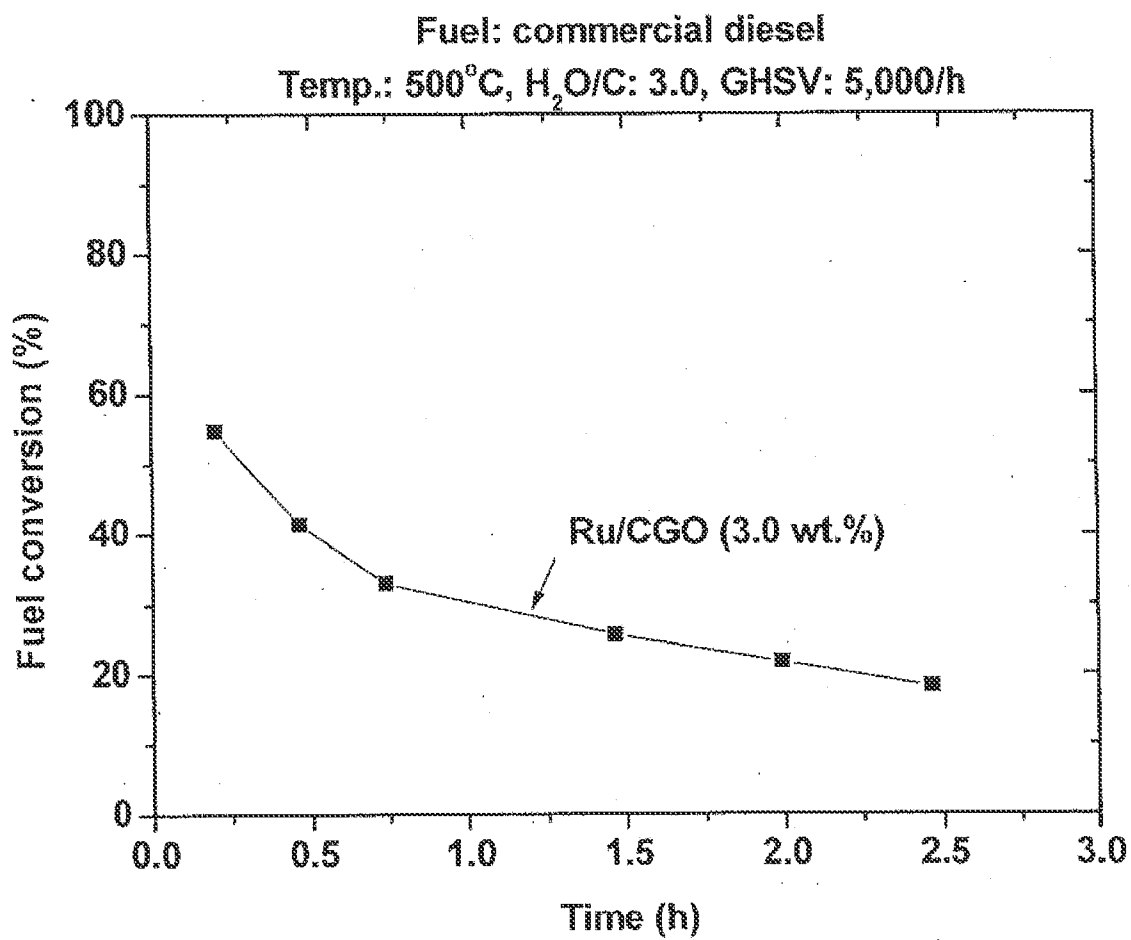
Fuel: n-dodecane, O_2/C : 0.3, H_2O/C : 3.0, GHSV: 5,000/h



(b)

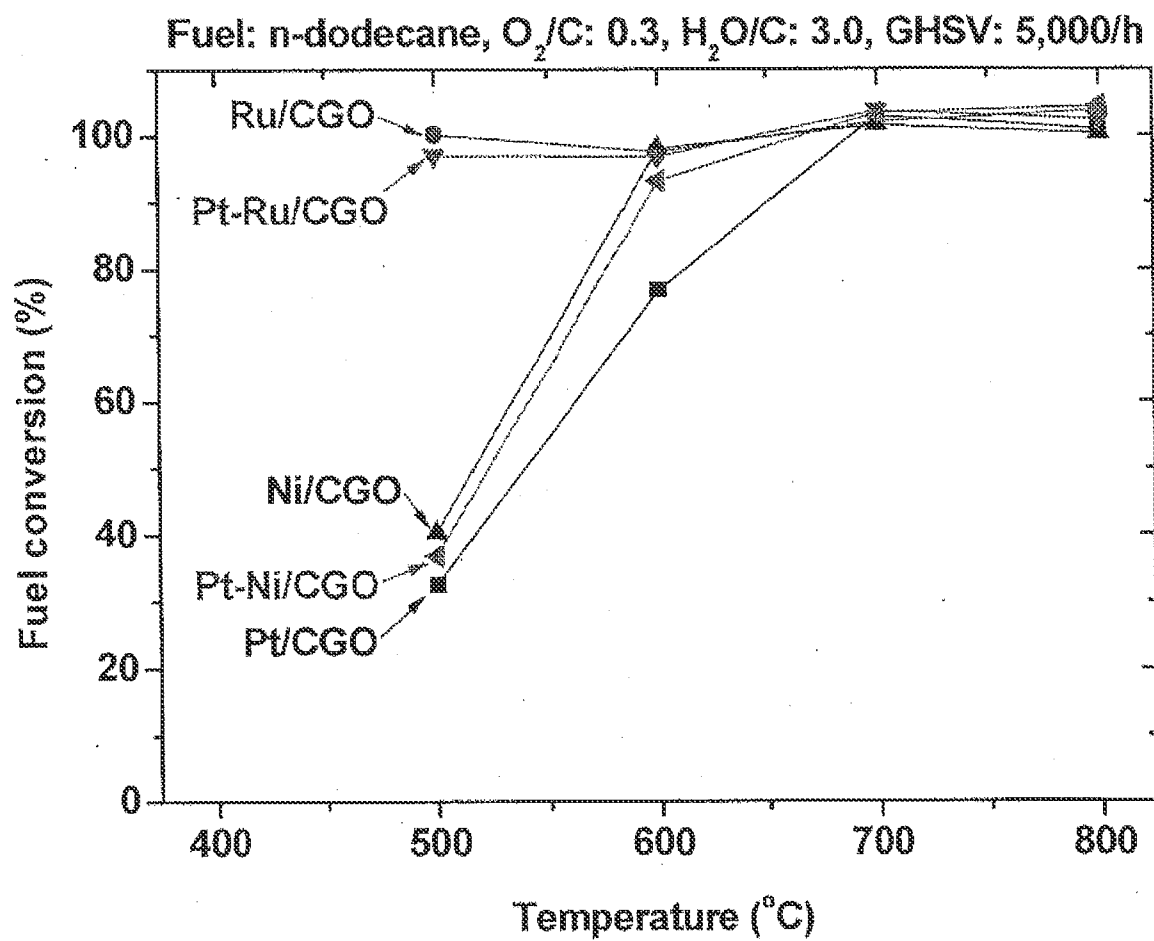
Fuel conversion and CH₄ production over mono-metallic catalysts

Figure 5



Fuel conversion over Ru/CGO (3.0 wt.%)

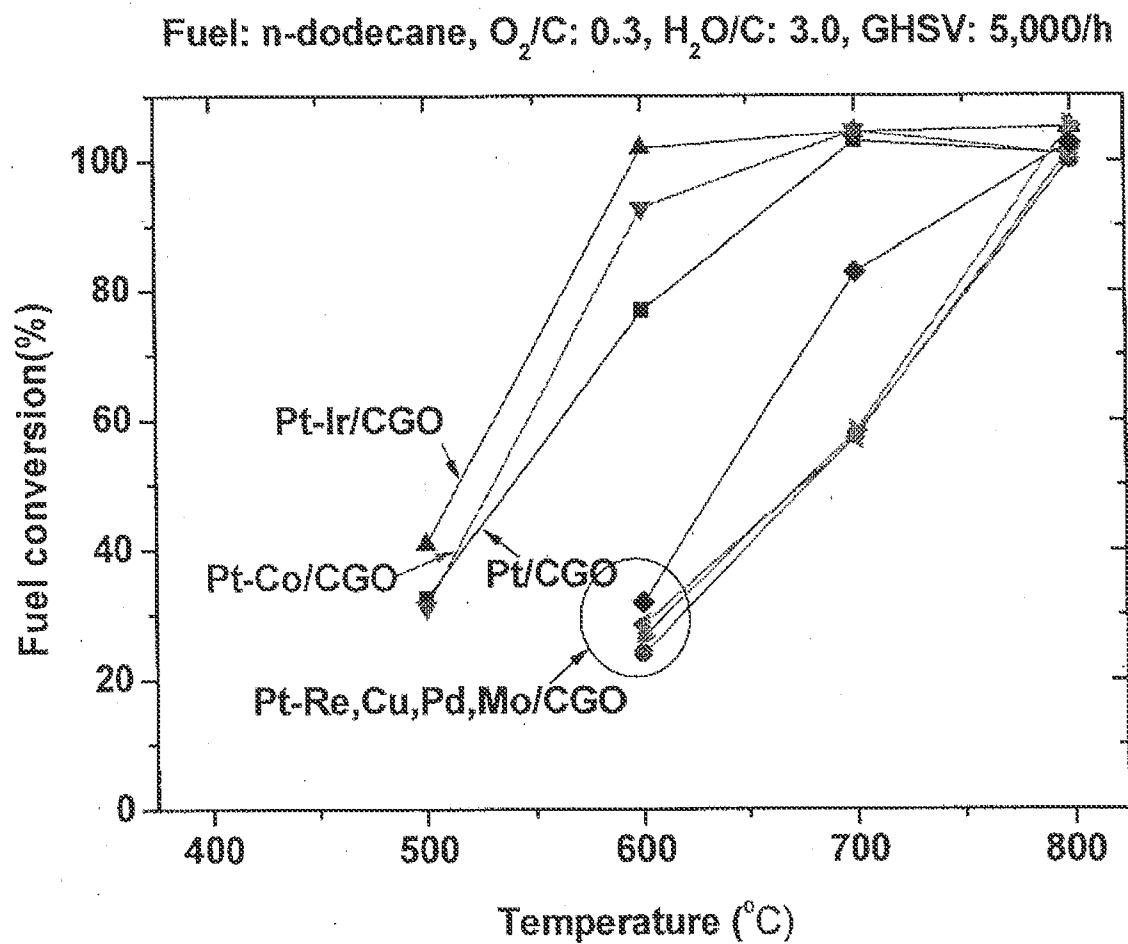
Figure 6(a)



(a)

Fuel conversion and CH_4 production over bi metallic catalysts

Figure 6(b)

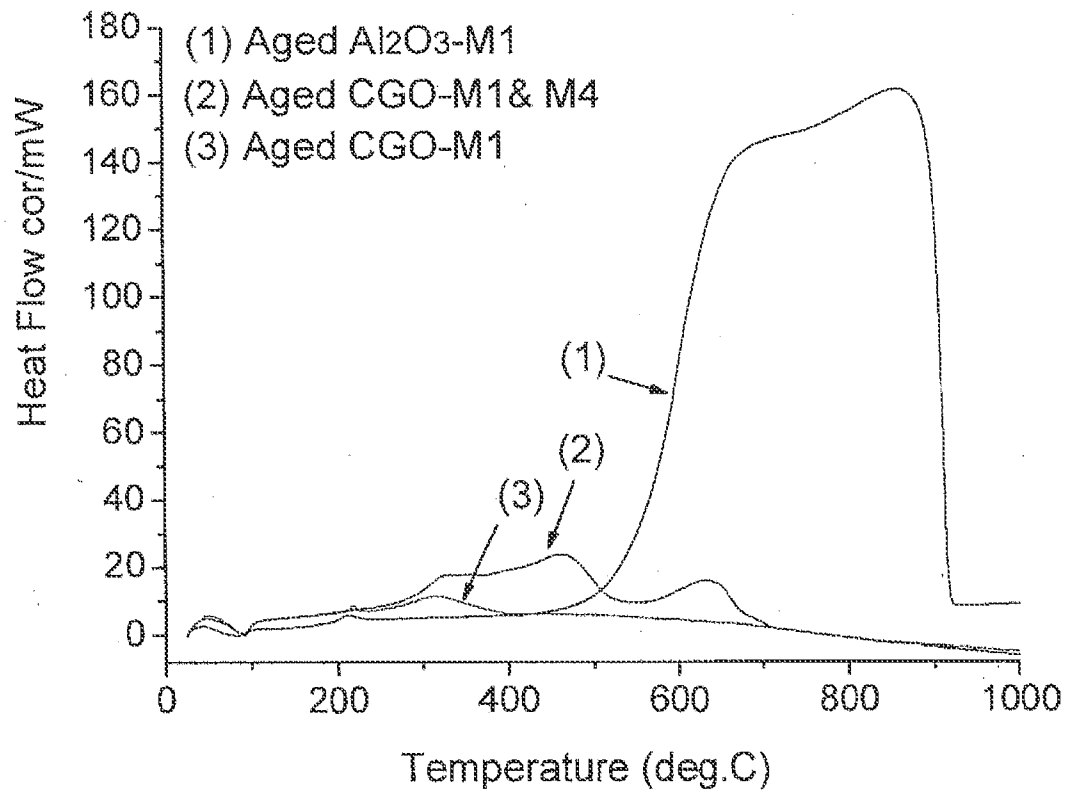


(b)

Fuel conversion and CH_4 production over bi metallic catalysts

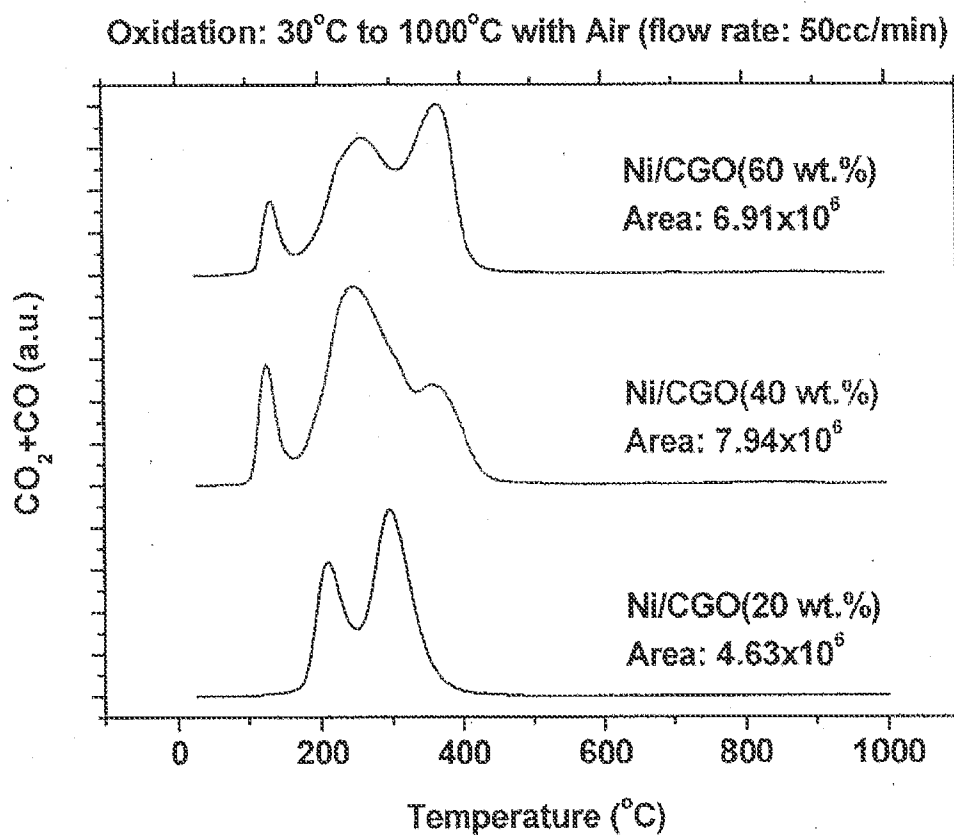
Figure 7

Synthetic Diesel, $H_2O/C=1.25$, $O_2/C=0.5$, 5000/h. Cat. Vol.=2ml



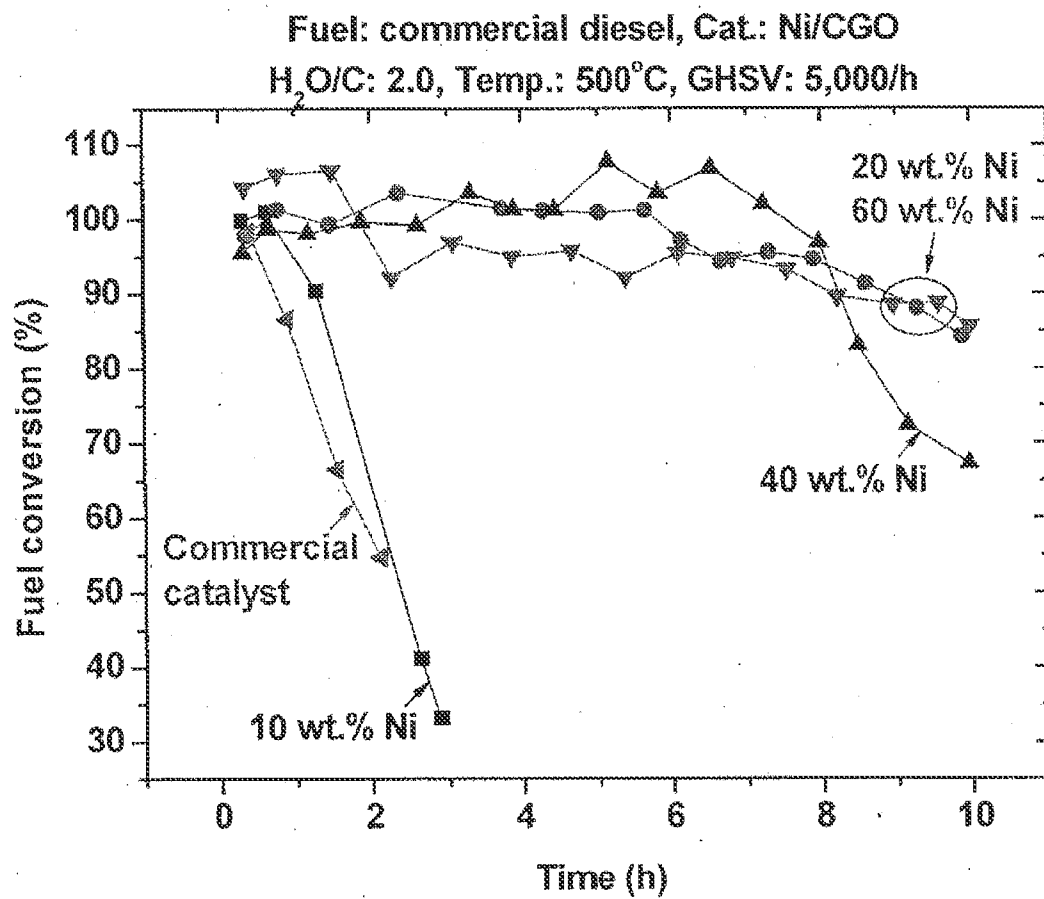
Amount of coke formation over CGO and Al_2O_3

Figure 8



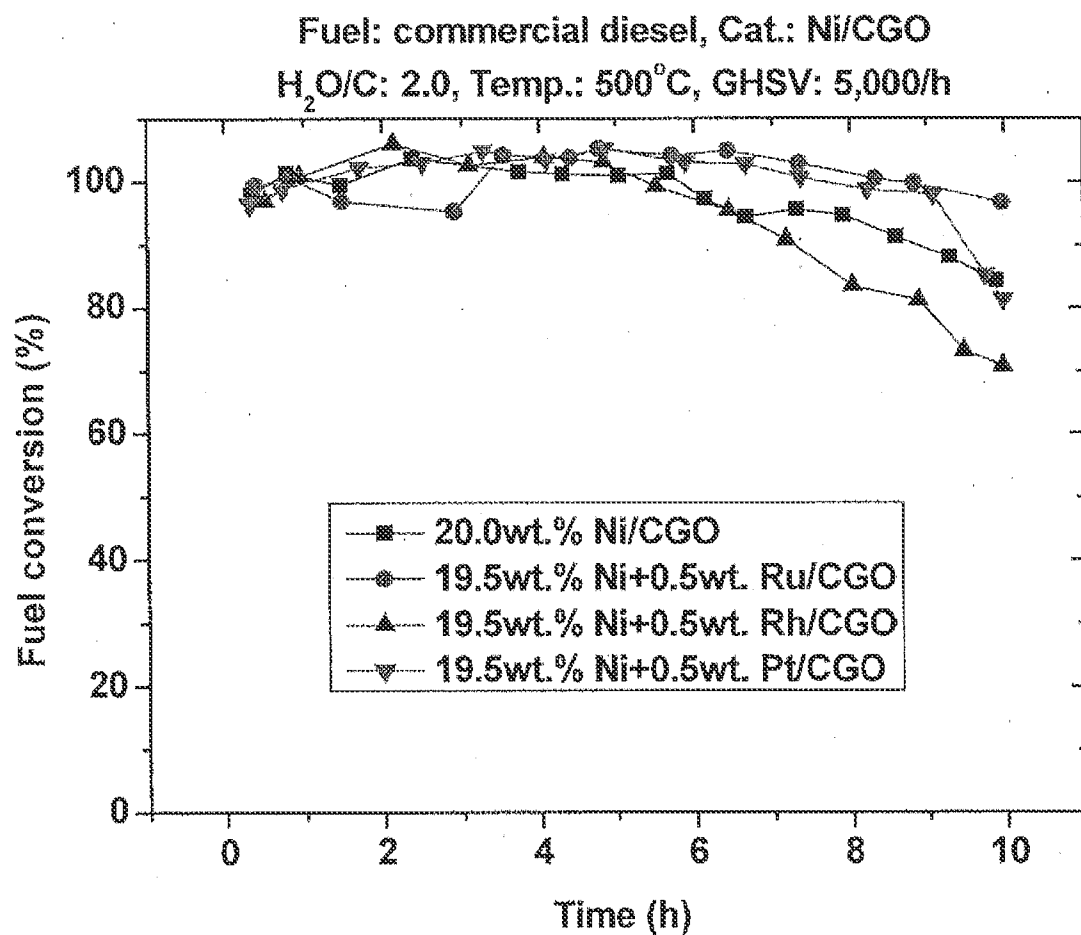
Amount of coke formation over various Ni content of Ni/CGO

Figure 9



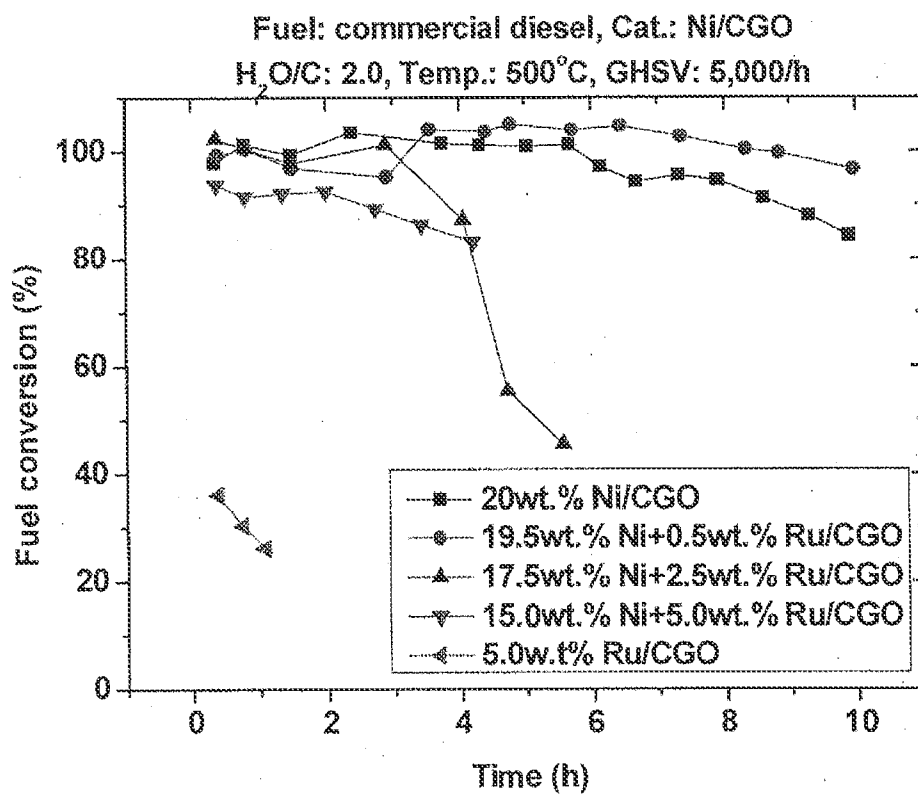
Activity vs Ni loading

Figure 10



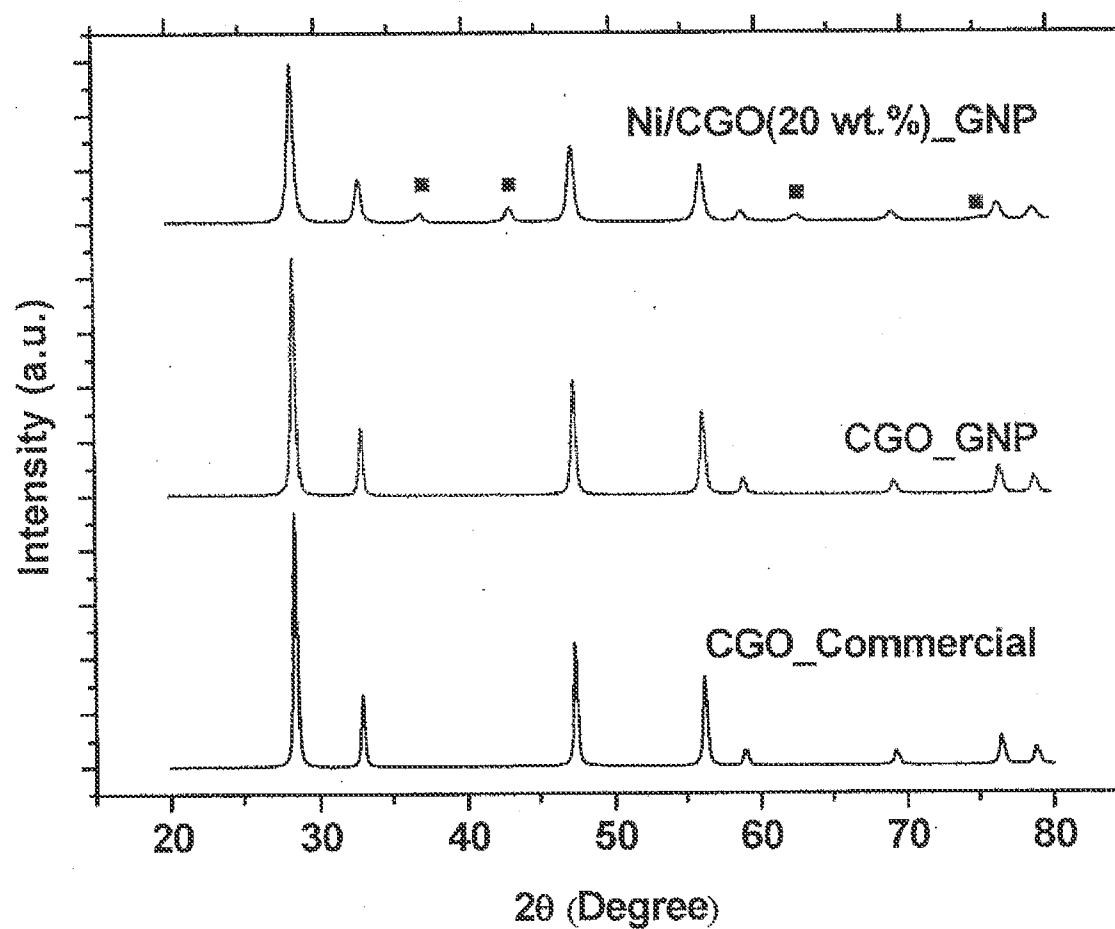
Stability test of Ni/CGO with 0.5 wt.% of precious metals

Figure 11



Stability test of Ni/CGO with various wt.% of Ru

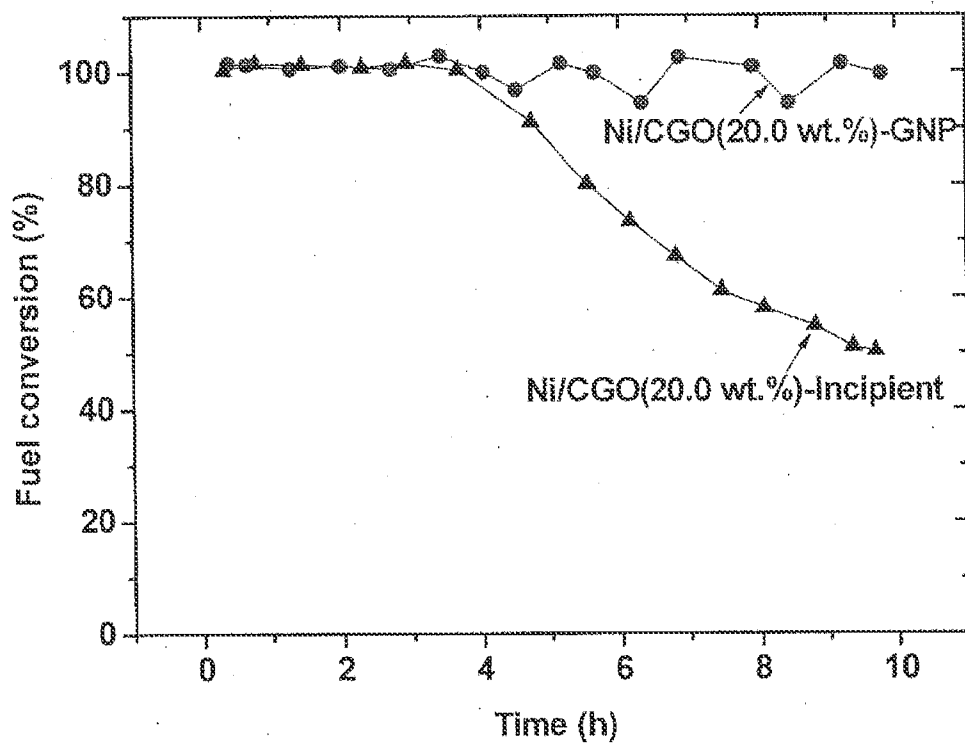
Figure 12



XRD patterns of Ni/CGO and commercial CGO

Figure 13

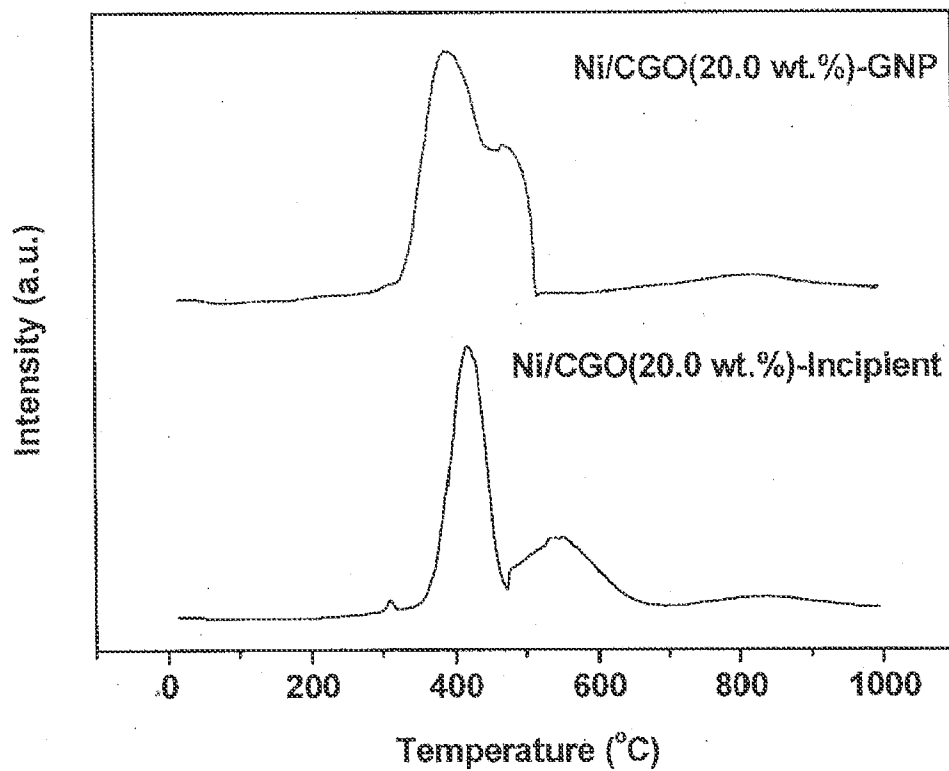
Fuel: commercial diesel, H_2O/C : 3.0, GHSV: 5,000/h



Commercial diesel pre-reforming over Ni/CGO (20.0 wt. %) prepared by GNP and incipient wetness impregnation (IWI)

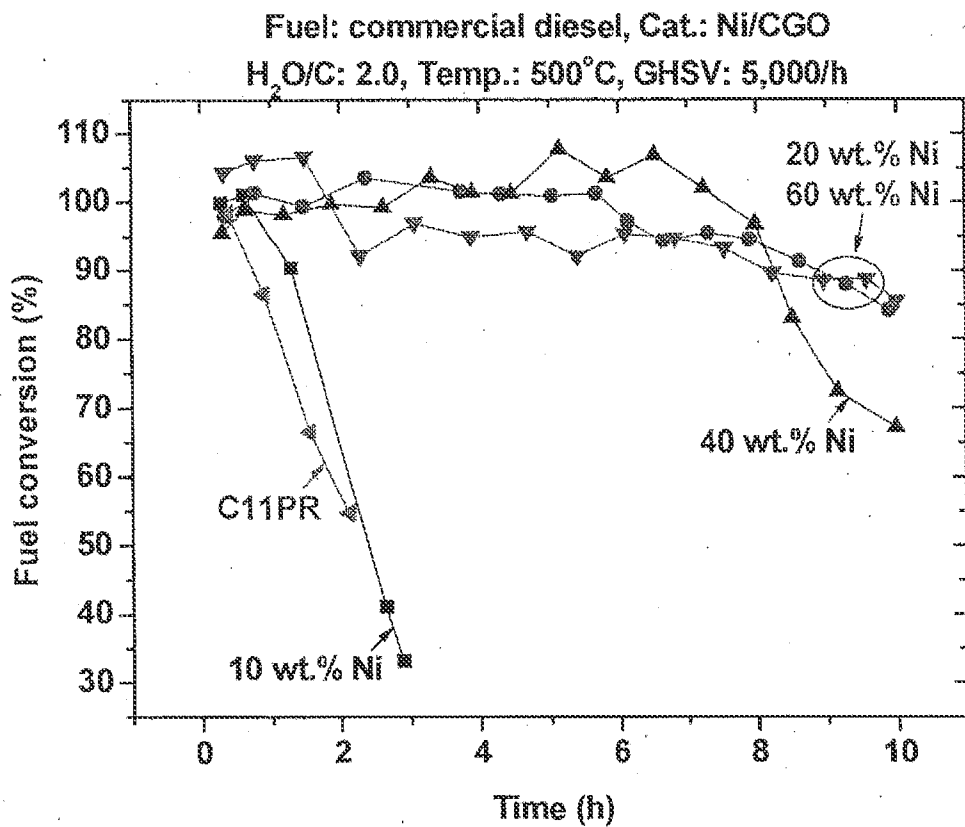
Figure 14

Reduction: 30°C to 1000°C with 5% H₂/Ar (flow rate: 90cc/min)



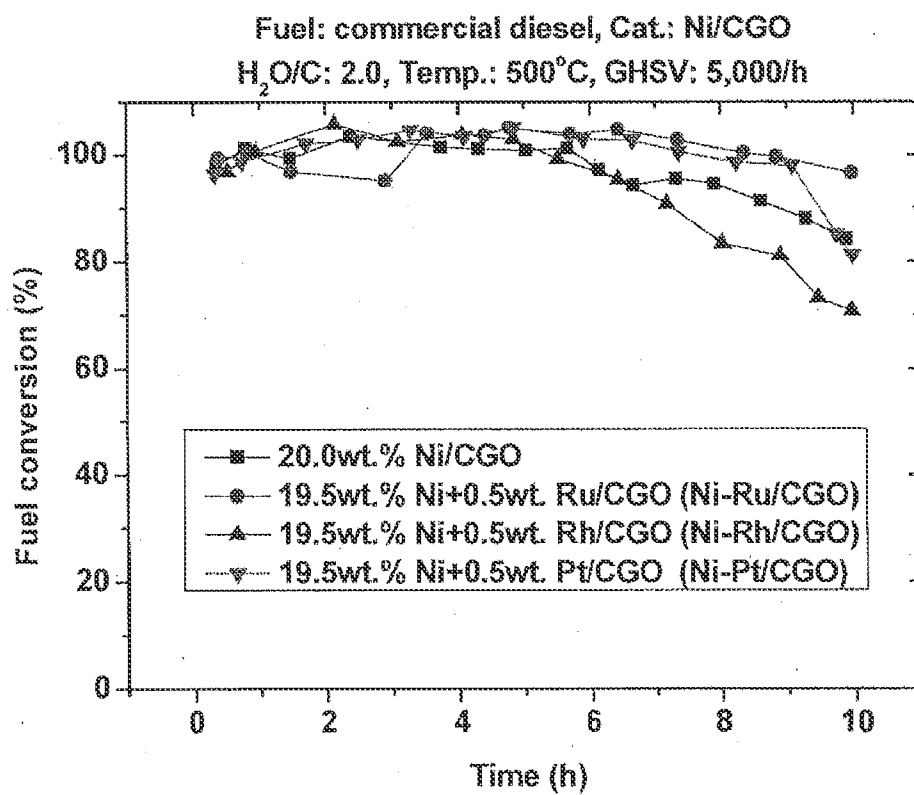
TPR profiles of Ni/CGO (20.0 wt. %) prepared by GNP and IWI

Figure 15



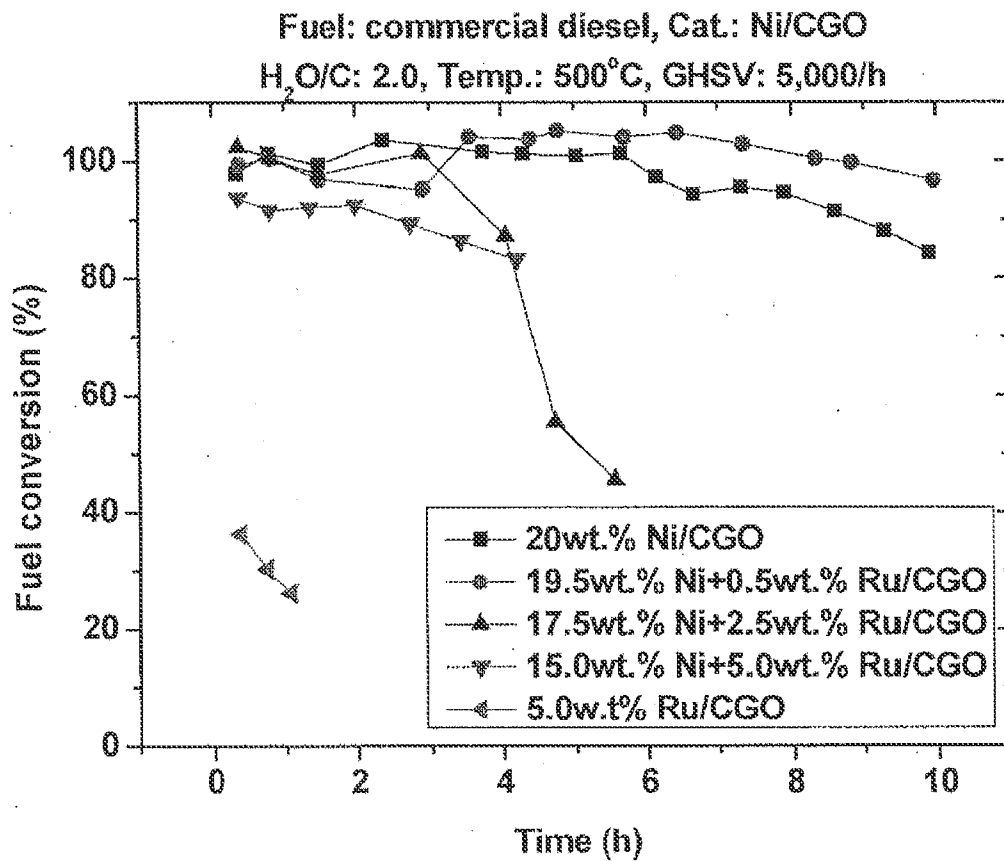
Accelerated degradation tests of various Ni/CGO catalysts

Figure 16



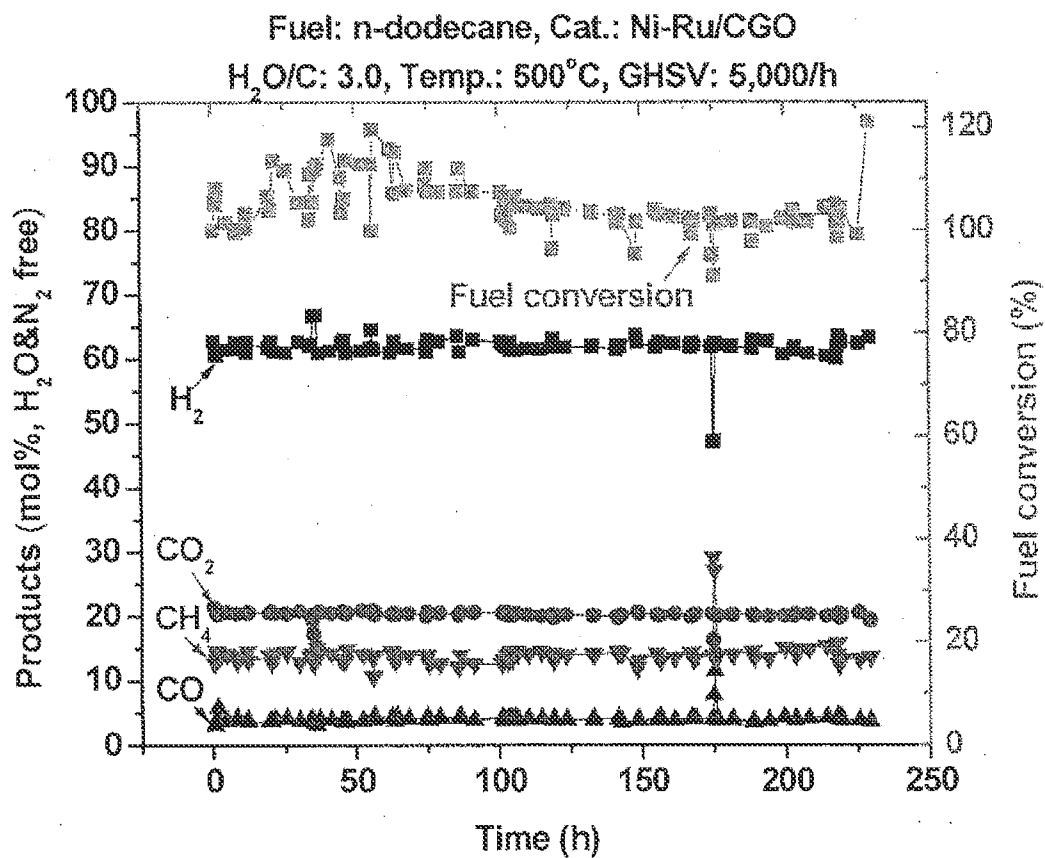
Accelerated degradation tests of Ni-Me/CGO (Me: Rh, Pt and Ru)
catalysts

Figure 17



Accelerated degradation tests of Ni-Ru/CGO catalysts with various Ru wt. %

Figure 18



Long-term stability of 19.5 wt.% of Ni+0.5 wt.% Ru/CGO