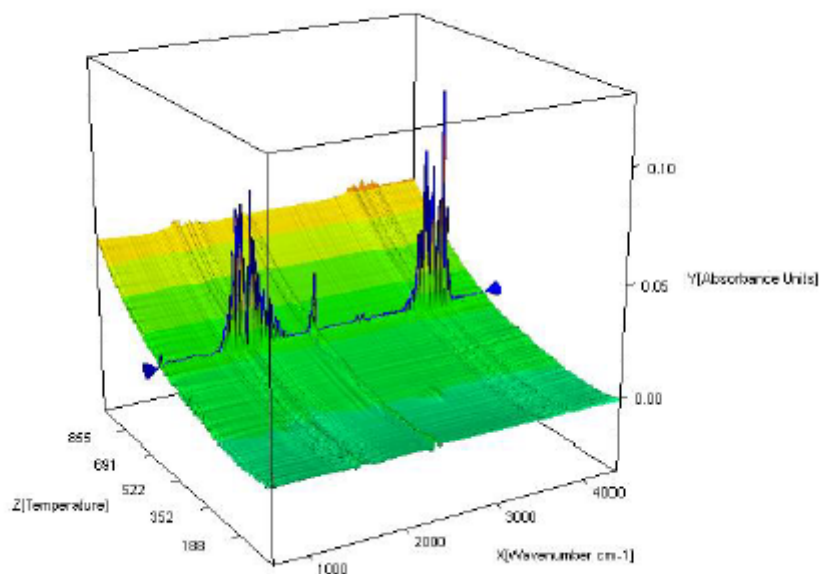


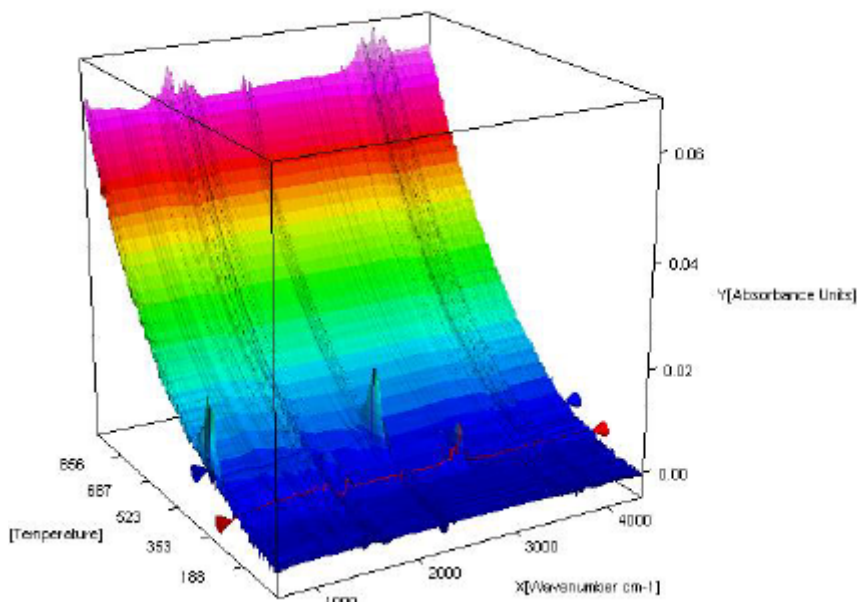
## Supplementary information

Formation of  $\text{H}_2\text{O}$  e  $\text{CO}_2$ :



(a)

Formation of  $\text{H}_2\text{O}$  e  $\text{CO}_2$ :



(b)

**Figure.** IR curve from TGA experiment of spent (a)Pt/CeO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> and (b)Pt/MgO-Al<sub>2</sub>O<sub>3</sub> used at 600°C, water to glycerol ratio of 9:1 and space velocities of 0.5 h<sup>-1</sup>

We performed TGA experiments coupled with IR. As a result of the combustion the coke under air, the formation of CO<sub>2</sub> and H<sub>2</sub>O is likely.