

Concerning $\text{Pd}_4(\mu\text{-NO}_2)_4(\mu\text{-OCOCMe}_3)_4$: Our assumption about stoichiometry and structure is based on the following. In reaction of $\text{Pd}_6(\mu\text{-CO})_6(\mu\text{-OCOBu}^i)_6$ possessed the structure similar to $\text{Pd}_6(\mu\text{-CO})_6(\mu\text{-OCOCMe}_3)_6$ we were able to isolate the complex with analysis: C 23.80, H 2.31, N 5.55%; calc. for $\text{Pd}_n(\text{NO}_2)_n(\text{OCOBu}^i)_n$: C 23.68, H 3.55, N 5.52%. IR-spectra of this compound contains bands 1620, 1556, 1408, 1328, 1160 cm^{-1} and doesn't contain band in the area 1900-2100 cm^{-1} . So this compound contains bridging NO_2 and RCOO ligands and doesn't contain CO-ligands. The total composition, ligands ratio and their coordination with that fact, that other product in reaction of similar compound $\text{Pd}_6(\mu\text{-CO})_6(\mu\text{-OCOCMe}_3)_6$ with NO contains two 4-nuclear fragments of initial 6-nuclear cluster, made us assume the structure, which is described in article. This assumption is in a good agreement with analysis for compounds mixture. Synthesis of mixture $\text{Pd}_8(\text{NO}_2)_4(\text{CO})_4(\text{OCOCMe}_3)_8$ and $\text{Pd}_4(\text{NO}_2)_4(\text{OCOR})_4$ was reproduced more than 10 times. And for every case we had the good elemental analysis under the hypothesis about equimolar mixture.

Concerning analysis of gas phase: The gas phase was analyzed for the presence of CO, CO_2 , N_2 , N_2O . Absolute quantities of gases after 72 hours are the following: 6.8-7.2 ml CO_2 (0.15-0.16 mole/1 mole Pd), 1.4-1.6 ml N_2O (0.03-0.035 mole/1 mole Pd), 50-60 ml N_2 (1.1-1.3 mole/1mole Pd). No traces of CO were detected. Thus, the contribution of first reaction in total reaction of coordinated CO oxidation is about 20% and the contribution of second reaction is about 80% respectively. In that case amount of N_2 formed in second reaction must be about 0.06 mol/1 mol Pd while really it ranges from 1.1 to 1.3 mol/1 mol Pd. One can assume that the excess of N_2 formed in reaction: $4\text{NO} = \text{N}_2 + \text{NO}_2$ catalyzed by palladium clusters. The formal number of catalytic cycles equals 7-8. The results have a good reproducibility – about 10% for reactions of CO oxidation and 15% for NO disproportionation.