

## Study on the OCM reaction in the redox cyclic mode over oxide catalysts

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Recently it was showed that the lattice of oxide catalysts can be a source of oxygen for methane activation in OCM reaction. Methyl radicals can be formed from methane molecules due to their interaction with lattice oxygen of the catalyst. At that time a part of lattice oxygen leaves the catalyst because it takes part in formation of such products as  $H_2O$  and  $CO_2$ . The loss of lattice oxygen having been spent in oxidation reactions is recovered by the following re-oxidation procedure of the catalyst. Thus, the OCM process can be carried out in so called a redox cyclic mode, in which the oxidation and reduction stages are performed separately. Actually, full oxidation of methane requires oxygen molecules twice more than oxidative activation of methane to form  $CH_3$  radicals. It seems that formation of  $CO_2$  can occur due to mostly participation of the mobile lattice oxygen with lower binding energy in the catalyst. In this work, the OCM reaction was investigated in the redox cyclic mode on a few catalyst samples including  $Mn-Na_2WO_4/SiO_2$ . The purpose is to find out a more effective catalytic system being able to work in the mode as well as proper reaction conditions to get both high yield of  $C_2$  and large selectivity to  $C_2$ , simultaneously.