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(54) **Title:** THE SYNTHESIS OF THE MICRO-POROUS SILICA GEL AND ITS APPLICATION TO THE PREPARATION OF CATALYSTS FOR C2 OXYGENATES SYNTHESIS FROM SYNGAS

(57) **Abstract:** A synthesis of the micro-porous silica gel and its application to preparation of catalysts for C_2 oxygenates synthesis from syngas is invented. The small particles of silica gel which are, produced by sol gel process are heated in a basic solution, followed by drying and/or calcinations, and thus form micro-porous silica as catalyst support. The basic solution can be one or a mixed solution of hydroxides, carbonates, bicarbonates, formates and acetates of alkali metal and ammonium. The obtained micro-porous silica can be impregnated with the solutions of rhodium salt and other transition element salts (as promoter precursors), followed by drying and/or calcinations, thus forming a micro-porous silica supported rhodiurn based catalyst. The rhodium salt can be $RhCl_3$ or $Rh(NO_3)_3$. The promoter precursors can be water-dissolvable transition metal salts, rare earth metals salts, alkali metal salts and alkali earth metal salts. The obtained catalysts show high activity and selectivity in the synthesis of C_2-oxygenates by the hydrogenation of CO under mild process conditions.