Claims:

1. A dry reforming catalyst in which an active material is impregnated on a surface of a metal oxide support and the active material is surrounded by a surfactant,

wherein the weight ratio of the active material: the metal oxide support: the surfactant is 0.01 to 40:59.6 to 99.5:0.04;

the metal oxide is one or more selected from the group consisting of MgO, TiO_2, SiO_2, CrO_2, Fe_2O_3, Fe_3O_4, CuO, ZnO, CaO, Sb_2O_4, Co_3O_4, Fe_3O_4, Pb_3O_4, Mn_3O_4, Ag_2O_2, U_3O_8, Cu_2O, Li_2O, Rb_2O, Ag_2O, Tl_2O, BeO, CdO, TiO, GeO_2, HfO_2, PbO_2, MnO_2, TeO_2, SnO_2, La_2O_3, Fe_2O_3, CeO_2, WO_2, UO_2, ThO_2, TeO_2 and MoO_3;

the active material is one or more selected from the group consisting of nickel (Ni), cobalt (Co), ruthenium (Ru), palladium (Pd), iridium (Ir), platinum (Pt) and rhodium (Rh); and molybdenum (Mo); and

the surfactant is one or more selected from the group consisting of polyvinylpyrrolidone (PVP), oleylamine, oleic acid, benzyl ether, trioctylphosphine, octadecylamine, hexadecylamine, polyethyleneglycol (PEG), 1,2-hexadecanediol and 1-octadecene.

2. The dry reforming catalyst of claim 1, wherein the dry reforming catalyst has a pore area of greater than 0 to 5,000 m^2/g and a CO_2 and CH_4 conversion of 95 to 98%.

3. The dry reforming catalyst of claim 1 or claim 2, wherein the catalyst is used for the dry reforming reaction of methane.

4. A nickel-molybdenum dry reforming catalyst in which nickel and molybdenum are impregnated on the surface of a magnesium oxide support and the

nickel is surrounded by a surfactant, of which weight ratio between nickel and molybdenum is 0.01 to 91.9: 99.9 to 8.1.

5. The nickel-molybdenum dry reforming catalyst of claim 4, which has a formula of $Ni_{10}Mo_2$@MgO.

6. A method of preparing a dry reforming catalyst of any one of claims 1 to 3, comprising:

(a) obtaining a mixture by dissolving an active material precursor, a metal oxide support and a surfactant in a polyol solvent; and

(b) preparing a catalyst in which the active material is impregnated on the surface of the metal oxide support by adding a reducing agent to the mixture.

7. The method of preparing a dry reforming catalyst of claim 6, wherein the active material is nickel (Ni) and molybdenum (Mo).

8. The method of preparing a dry reforming catalyst of claim 7, wherein the weight ratio of nickel to molybdenum is 0.01 to 100: 99.9 to 0.

9. The method of preparing a dry reforming catalyst of claim 6, wherein a precursor of nickel is one or more selected from the group consisting of $NiCl_2$, $NiCl_2 \cdot 6H_2O$, $Ni(NO_3)_2$, $NiSO_4$, $(NH_4)_2Ni(SO_4)_2 \cdot 6H_2O$, $Ni(OCOCH_3)_2 \cdot 4H_2O$, $NiBr_2$, $NiCO_3$, NiF_2, NiI_2, $NiC_2O_4 \cdot 2H_2O$, and $Ni(ClO_4)_2 \cdot 6H_2O$, and a precursor of molybdenum is one or more selected from the group consisting of $Mo(CO)_6$, MoO_3, Na_2MoO_4, $CaMoO_4$, $ZnMoO_4$, and $(NH_4)_6Mo_7O_{24} \cdot 4H_2O$.

10. The method of preparing a dry reforming catalyst of any one of claims 6 to 9, wherein the reducing agent is one or more selected from the group consisting of hydrazine, $NaBH_4$, $LiAlH_4$, diisobutylaluminum hydride (DIBAL-H) and diborane.

11. A method of dry reforming methane, the method comprises producing a synthetic gas composed of hydrogen and carbon monoxide by reacting methane with carbon dioxide at 600 to 800°C in the presence of the dry reforming catalyst of any one of claims 1 to 9.

12. The method of dry reforming methane of claim 11 wherein the method is performed at a pressure of 1 to 30 bar.