

Table S1. Extracted data for ANN model development for prediction of hydrogen production in catalytic dry reforming.

Type of Hydrocarbon	Type of Catalyst	CO ₂ /Hydrocarbon Molar Ratio	Reaction Temperature (K)	Pressure (Mpa)	Hydrocarbon Conversion (%)	H ₂ Yield (%)	Stability Test Time (H)	Ref.
Methane (CH ₄)	Ni-Co/MgO-ZrO ₂	3	1022.15	-	87.7	85.5	100	[1]
Methane (CH ₄)	Ni-Co/Al ₂ O ₃	1	1123.15	0.1	97.89	98.21	24	[2]
Methane (CH ₄)	MgO-coated Ni/SBA-15	1	1073.15	0.1	98	82	40	[3]
Methane (CH ₄)	Ce-Co-Ni/Al ₂ O ₃	1	1023	0.1	68	64	2.5	[4]
Methane (CH ₄)	Ni/CH-Pr	1	1023.15	0.1	98	97	150	[5]
Methane (CH ₄)	Sr loading on Co/γ-Al ₂ O ₃	1	973.15	0.1	-	77.9	5.8	[6]
Methane (CH ₄)	LaNi _{0.99} Pd _{0.01} O ₃	1	1123.15	0.1	100	41	24	[7]
Methane (CH ₄)	NiPd/10CeO ₂ .5ZrO ₂ /Al ₂ O ₃	1	1073.15	0.1	100	75	20	[8]
Methane (CH ₄)	Ni-Zr polyol	1	1073.15	0.1	96.6	86.4	6	[9]
Glycerol (C ₃ H ₈ O ₃)	La-Ni/Al ₂ O ₃	1	873	-	24.5	9.7	-	[10]
Methane (CH ₄)	MgCoNi/Al ₂ O ₃	1	1123.15	0.1	95	97	200	[11]
Methane (CH ₄)	Co/ZrO ₂	1	973.15	0.1	-	80	6	[12]
Methane (CH ₄)	Co/CeO ₂	1	873.15	0.1	-	60	6	[12]
Methane (CH ₄)	Co/Y	1	1123.15	0.1	79	60	10	[13]
Methane (CH ₄)	Ni/CeO ₂	1	973.15	0.1	65	39	5	[14]
Methane (CH ₄)	Ni-Co/CeO ₂	1	973.15	0.1	68	40	5	[14]
Methane (CH ₄)	Co/CeO ₂	1	973.15	0.1	6	0	5	[14]
Methane (CH ₄)	Ni/CeO ₂	1	1123.15	0.1	58	32	5	[14]
Methane (CH ₄)	Ni-Co/CeO ₂	1	1123.15	0.1	59	33	5	[14]
Methane (CH ₄)	Co/CeO ₂	1	1123.15	0.1	6	0	5	[14]
Methane (CH ₄)	Rh/Al ₂ O ₃	1	1073.15	0.1	83.6	46	6	[15]
Methane (CH ₄)	Rh/NiO-Al ₂ O ₃	1	1073.15	0.1	89.3	94	6	[15]
Methane (CH ₄)	Rh/MgO-Al ₂ O ₃	1	1073.15	0.1	80.8	44	6	[15]
Methane (CH ₄)	Rh/ZrO ₂ -Al ₂ O ₃	1	1073.15	0.1	84.3	47	6	[15]
Methane (CH ₄)	Rh/CeO ₂ -Al ₂ O ₃	1	1073.15	0.1	80.3	42	6	[15]
Methane (CH ₄)	Rh/La ₂ O ₃ -Al ₂ O ₃	1	1073.15	0.1	72.5	42	6	[15]
Ethanol (C ₂ H ₅ OH)	Rh/Al ₂ O ₃	1	1073.15	0.1	-	28	6	[15]

Ethanol (C ₂ H ₅ OH)	Rh/NiO- Al ₂ O ₃	1	1073.15	0.1	-	35	6	[15]
Ethanol (C ₂ H ₅ OH)	Rh/MgO- Al ₂ O ₃	1	1073.15	0.1	-	28	6	[15]
Ethanol (C ₂ H ₅ OH)	Rh/ZrO ₂ - Al ₂ O ₃	1	1073.15	0.1	-	24	6	[15]
Ethanol (C ₂ H ₅ OH)	Rh/CeO ₂ - Al ₂ O ₃	1	1073.15	0.1	-	28	6	[15]
Ethanol (C ₂ H ₅ OH)	Rh/La ₂ O ₃ - Al ₂ O ₃	1	1073.15	0.1	-	29	6	[15]
Ethanol (C ₂ H ₅ OH)	NiO-Al ₂ O ₃	1	1073.15	0.1	-	29	6	[15]
Methane (CH ₄)	Co-Ce/ZrO ₂	1	973	0.1	74	72	6	[16]
Methane (CH ₄)	Ni- Co/Al ₂ O ₃ - MgO	1	1123.15	0.1	97.5	94	20	[17]
Methane (CH ₄)	3La 2Co 7Ni/MSU-S	1	1023.15	0.1	93	99	50	[18]
Glycerol (C ₃ H ₈ O ₃)	Ni/ZrO ₂	1	973.15	0.1	26	13	3	[19]
Glycerol (C ₃ H ₈ O ₃)	Ni/CaO	1	973.15	0.1	29	23	3	[19]
Methane (CH ₄)	Co/CeO ₂	1	1023	0.1	79.5	37.6	4	[20]
Methane (CH ₄)	Co/CeO ₂	1	1023	0.1	-	41.98	2	[21]
Methane (CH ₄)	Co/La ₂ O ₃	1	1023	0.1	50	45	-	[21]
Methane (CH ₄)	BaZrRhO ₃	1	1023	0.1	79	100	65	[22]
Methane (CH ₄)	BaZrRuO ₃	1	1023	0.1	60	98	65	[22]
Methane (CH ₄)	BaZrPtO ₃	1	1023	0.1	32	90	65	[22]
Methane (CH ₄)	Ni/mesopor- ous SiO ₂	1	973.15	0.1	78	80	30	[23]
Methane (CH ₄)	Ni//ZrO ₂	1	1123.15	0.1	98	97	30	[24]
Methane (CH ₄)	Ni/Al ₂ O ₃	1	973.15	0.1	59	50	10	[25]
Methane (CH ₄)	Ni-Co/SiO ₂	1	1023.15	0.1	100	85	100	[26]
Methane (CH ₄)	NiO-CaO	1	873.15	0.1	-	47.1	0.48	[27]
Methane (CH ₄)	Ni/Al ₂ O ₃	1	1073.15	0.1	78	74	20	[28]
Methane (CH ₄)	Ni/Mg-Al-O	1	1073.15	0.1	83	79	20	[28]
Methane (CH ₄)	Ni-Nd/Mg- Al-O	1	1073.15	0.1	89	82	20	[28]
Methane (CH ₄)	Ni-Ce/Mg- Al-O	1	1073.15	0.1	93	86	20	[28]
Methane (CH ₄)	Li ₂ ZrO ₃	1	1173.15	0.1	87	45	3	[29]
Methane (CH ₄)	Na ₂ ZrO ₃	1	1173.15	0.1	79	28	3	[29]
Methane (CH ₄)	NiO(10)/Na ₂ ZrO ₃	1	923.15	0.1	-	26.1	-	[30]
Methane (CH ₄)	LaNiO ₃ with chitosan	1	1073.15	0.1	95	93	7	[31]
Methane (CH ₄)	Ni- Co/Al ₂ O ₃	1	973	0.1	67	49	4	[32]
Methane (CH ₄)	Ni- Co/Al ₂ O ₃ -	1	1073.15	0.1	86.96	78	8	[33]

MgO/Nb-Zr								
Methane (CH ₄)	Ni/Al ₂ O ₃	1	1023.15	0.1	93	90	50	[34]
Methane (CH ₄)	Ru/Al ₂ O ₃	1	1023.15	0.1	90	88	50	[34]
Methane (CH ₄)	Ru-Ni/Al ₂ O ₃	1	1023.15	0.1	94	93	50	[34]
Methane (CH ₄)	Ni/YSZ	1	1023.15	0.1	92	88	50	[34]
Methane (CH ₄)	Ru/YSZ	1	1023.15	0.1	80	74	50	[34]
Methane (CH ₄)	Ru-Ni/YSZ	1	1023.15	0.1	93	89	50	[34]
Methane (CH ₄)	Ni/MgAl ₂ O ₄	1	1023.15	0.1	99	97	50	[34]
Methane (CH ₄)	Ru/MgAl ₂ O ₄	1	1023.15	0.1	6	-	50	[34]
Methane (CH ₄)	Ru-Ni/MgAl ₂ O ₄	1	1023.15	0.1	93	90	50	[34]
Methane (CH ₄)	Ni/MgAl ₂ O ₄	1	1023.15	0.1	96	96	50	[34]
Methane (CH ₄)	Ni-BN-R	1	1023.15	0.1	52	-	20	[35]
Methane (CH ₄)	NiMA-1-R	1	1023.15	0.1	78	-	20	[35]
Methane (CH ₄)	NiMA-2-R	1	1023.15	0.1	77	-	20	[35]
Methane (CH ₄)	NiMA-BN-L-R	1	1023.15	0.1	65	-	20	[35]
Methane (CH ₄)	NiMA-BN-H-R	1	1023.15	0.1	80	-	20	[35]
Methane (CH ₄)	NiMA-BN-M-R	1	1023.15	0.1	85	-	20	[35]
Glycerol (C ₃ H ₈ O ₃)	Ag-Ni/Al ₂ O ₃	1	1073	0.1	40.7	32	72	[36]
Glycerol (C ₃ H ₈ O ₃)	Re-Ni/CaO	1	1073.15	0.1	61	56	2	[37]
Methane (CH ₄)	NiCe	1	773.15	0.1	-	23	18	[38]
Methane (CH ₄)	NiAl	1	773.15	0.1	-	25	18	[38]
Methane (CH ₄)	NiZr	1	773.15	0.1	-	8	18	[38]
Methane (CH ₄)	NiSi	1	773.15	0.1	-	4	18	[38]
Methane (CH ₄)	NiTi	1	773.15	0.1	-	0	18	[38]
Methane (CH ₄)	NiMgO/AC	1	1073.15	0.1	84	96	-	[39]
Methane (CH ₄)	Ni/MgO/AC	1	1073.15	0.1	88	98	-	[39]
Methane (CH ₄)	Co-Ce/Ca/AC-N	1	1073.15	0.1	69	78	12.5	[40]
Methane (CH ₄)	Ni ₆₀ Co ₄₀ alloy	1	1223.15	0.1	61	55	50	[41]
Methane (CH ₄)	Ni/SBA-15	1	1073.15	0.1	87.11	80	24	[42]
Methane (CH ₄)	Zr/Ni/SBA-15	1	1073.15	0.1	87.07	42	5	[43]
Methane (CH ₄)	1.5CeeNi5/MgAl ₂ O ₄	1	1023.15	0.1	92	87.5	4	[44]
Methane (CH ₄)	1.5CeeNi5/MgAl ₂ O ₅	1	923.15	0.1	72	65.2	4	[44]
Methane (CH ₄)	Pt/xLa ₂ O ₃ -Al ₂ O ₃	1	873.15	0.1	35	-	24	[45]
Methane (CH ₄)	Ni/Al ₂ O ₃	0.48	973.15	0.1	100	-	24	[46]
Methane (CH ₄)	Ni/mesoporous silica	1	1023	0.1	98	72	25	[47]
Methane (CH ₄)	NiPd-SP-OA	1	973.15	0.1	73	65	6	[48]

Methane (CH ₄)	NiPd-SP-Imp	1	973.15	0.1	46	38.5	6	[48]
Methane (CH ₄)	Ni-SP-OA	1	973.15	0.1	50	45	6	[48]
Methane (CH ₄)	Ni-SP-Imp	1	973.15	0.1	37.5	35	6	[48]
Methane (CH ₄)	Pd-SP-Imp	1	973.15	0.1	7	8.5	6	[48]
Methane (CH ₄)	Co/Al ₂ O ₃	1	1073	0.1	76.2	63	8	[49]
Methane (CH ₄)	CeO ₂ -Ni	1	1023.15	0.1	93	90	50	[50]

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