

LIST OF TABLES

TABLE		PAGE
4.1	Surface area, porosity, average particle size and percent yield of CeO ₂ prepared by different methods	37
4.2	Surface tension of aqueous cerium compound and the average Particle size of CeO ₂ prepared by different cerium sources	42
4.3	Surface area, porosity, average particle size and percent yield of CeO ₂ prepared by different cerium sources	43
4.4	Surface area, porosity, average particle size and percent yield of CeO ₂ prepared by different surfactants	46
4.5	Total pore volume, surface area and average pore diameter of CeO ₂ prepared by different calcinations temperature	47
4.6	Surface area, porosity, crystallite size and percent yield of CeO ₂ prepared by CEAs at different water content	50
5.1	Surface area, porosity, average particle size and percent yield of CeO ₂ and Ni/CeO ₂ prepared by different methods of CEAs	56
5.2	The result of all catalysts after methane steam reforming process	58
5.3	Surface area of the catalyst supports prepared by different methods before and after calcination	60
5.4	Surface area of all catalysts prepared by different methods before and after reaction	62
5.5	Total pore volume, surface area and average pore diameter of all catalysts prepared by CEAs	65
5.6	The results after methane steam reforming at 900°C	70

A.1	The size distribution of CeO ₂ prepared by RM method	86
A.2	The size distribution of CeO ₂ prepared by ELM method	86
A.3	The size distribution of CeO ₂ prepared by CEAs method	86
A.4	The size distribution of CeO ₂ particles prepared by CEAs method : (NH ₄) ₃ Ce(NO ₃) ₂ as a cerium source	88
A.5	The size distribution of CeO ₂ particles prepared by CEAs method : Ce(NO ₃) ₃ ·6H ₂ O as a cerium source	88
A.6	The size distribution of CeO ₂ particles prepared by CEAs method : CeCl ₃ ·7H ₂ O as a cerium source	88
A.7	The size distribution of CeO ₂ particles prepared by CEAs method : PE4LE as a surfactant	90
A.8	The size distribution of CeO ₂ particles prepared by CEAs method : Brij52 as a surfactant	90
A.9	The size distribution of CeO ₂ particles prepared by CEAs method : Brij96V as a surfactant	90
A.10	The size distribution of CeO ₂ particles prepared by CEAs method : AOT as a surfactant	91
A.11	The size distribution of CeO ₂ particles prepared by CEAs method : CTAB as a surfactant	91
A.12	The size distribution of CeO ₂ particles prepared by CEAs method : calcined at 500°C	93
A.13	The size distribution of CeO ₂ particles prepared by CEAs method : calcined at 600°C	93

A.14	The size distribution of CeO ₂ particles prepared by CEAs method : calcined at 800°C	93
B.1	Nitrogen adsorption-desorption data of CeO ₂ prepared by RM method	95
B.2	Nitrogen adsorption-desorption data of CeO ₂ prepared by ELM method	96
B.3	Nitrogen adsorption-desorption data of CeO ₂ prepared by CEAs method	97
B.4	Nitrogen adsorption-desorption data of CeO ₂ -ZrO ₂ prepared by CEAs method	98
B.5	Nitrogen adsorption-desorption data of CeO ₂ -ZrO ₂ prepared by CEAs method	99
B.6	Nitrogen adsorption-desorption data of Ni/CeO ₂ -ZrO ₂ prepared by CEAs method	100
B.7	Pore size distribution data of CeO ₂ prepared by CEAs method	101
B.8	Pore size distribution data of CeO ₂ -ZrO ₂ prepared by CEAs method	101
B.9	Pore size distribution data of Ni/CeO ₂ prepared by CEAs method	102
B.10	Pore size distribution data of Ni/CeO ₂ -ZrO ₂ prepared by CEAs method	102