

## LIST OF TABLES

Table No.	Table Caption	Page No.
Table 1.1	Composition of CO in dry atmosphere (by volume)	5
Table 1.2	Exhaust component of diesel engines and gasoline powered engines	5
Table 1.3	Emission Standards in India and EU emission (Gasoline engines)	11
Table 2.1	Application of various hopcalite catalysts for CO oxidation	50
Table 3.1	Techniques used for characterization of catalysts	74
Table 4.1	Calcination strategy and nomenclature of catalysts	99
Table 4.2	Particle size of CuMn <sub>2RC</sub> catalysts	101
Table 4.3	EDX analysis of CuMn <sub>2RC</sub> catalysts	103
Table 4.4	XRD analysis of CuMn <sub>2RC</sub> catalysts	105
Table 4.5	Binding energy and chemical state of CuMn <sub>2RC</sub> catalysts	110
Table 4.6	Textural property of CuMn <sub>2RC</sub> catalysts	112
Table 4.7	Light-off characteristics of CuMn <sub>2SA</sub> catalysts	115
Table 4.8	Light-off characteristics of CuMn <sub>2FA</sub> catalysts	117
Table 4.9	Light-off characteristics of CuMn <sub>2RC</sub> catalysts	118
Table 4.10	Light-off characteristics of Cu <sub>1</sub> Mn <sub>2</sub> catalysts	120
Table 5.1	Calcination Strategy and nomenclature of the catalysts	125
Table 5.2	Particle size of CuMn <sub>2RC</sub> catalysts	127
Table 5.3	The atomic and weight ratios of Cu, Mn and O in CuMn <sub>2RC</sub>	128

	catalyst by EDX analysis	
Table 5.4	XRD analysis of CuMn <sub>2RC</sub> catalysts	130
Table 5.5	Binding energy and chemical state of CuMn <sub>2RC</sub> catalysts	136
Table 5.6	Textural property of CuMn <sub>2RC</sub> catalysts	139
Table 5.7	Light-off characteristics of CuMn <sub>2SA</sub> catalysts	141
Table 5.8	Light-off characteristics of CuMn <sub>2FA</sub> catalysts	143
Table 5.9	Light-off characteristics of CuMn <sub>2RC</sub> catalysts	144
Table 5.10	Light-off characteristics of CuMn <sub>2</sub> (precipitate by KMnO <sub>4</sub> ) catalysts	146
Table 6.1	Atomic and weight percentage of Cu <sub>1</sub> Mn <sub>8</sub> catalyst	151
Table 6.2	Chemical state and binding energy of Cu <sub>1</sub> Mn <sub>8</sub> catalysts	155
Table 6.3	The surface area, pore volume and pore size of Cu <sub>1</sub> Mn <sub>8</sub> catalyst	156
Table 6.4	Optimum preparation conditions of Cu <sub>1</sub> Mn <sub>8</sub> catalyst	164
Table 7.1	Nomenclature of prepared doped catalysts	170
Table 7.2	Atomic percentage of dopant in Cu <sub>1</sub> Mn <sub>8</sub> catalyst by EDX analysis	176
Table 7.3	Textural property of the catalysts	178
Table 7.4	Light off characteristics of catalysts for CO oxidation in stagnant air	181
Table 7.5	Light off characteristics of catalysts for CO oxidation in flowing air	183
Table 7.6	Light off characteristics of catalysts for CO oxidation in reactive calcination	184

Table 7.7	Light-off characteristics of 3%AgCuMn <sub>8</sub> Ox catalysts	186
Table 7.8	Optimization of wt.% Ag in Cu <sub>1</sub> Mn <sub>8</sub>	188
Table 8.1	Nomenclature of prepared catalysts	192
Table 8.2	Atomic percentage of a catalyst by EDX analysis	196
Table 8.3	Weight percentage of a catalyst by EDX analysis	196
Table 8.4	Textural property of Cu <sub>1</sub> Mn <sub>8</sub> catalysts	202
Table 8.5	Light off characteristics of ceria doped and un-doped Cu <sub>1</sub> Mn <sub>8</sub> catalysts	204
Table 8.6	Light off characteristics of Ce and Ag doped and un-doped Cu <sub>1</sub> Mn <sub>8</sub> catalysts	206
Table 8.7	Light off characteristics of Ce and Au doped and un-doped Cu <sub>1</sub> Mn <sub>8</sub> catalysts	208
Table 8.8	Light off characteristics of (Ce and Au or Ag) doped and un-doped Cu <sub>1</sub> Mn <sub>8</sub> catalysts	210
Table 9.1	Nomenclature of prepared catalysts	215
Table 9.2	The surface area, pore volume and pore size of the catalysts	223
Table 9.3	Activity test of supported and unsupported 3%AgCuMn <sub>8</sub> Ox /Z% $\gamma$ -Al <sub>2</sub> O <sub>3</sub> catalysts	226
Table 9.4	Comparison of 3%AgCuMn <sub>8</sub> Ox and 3%AgCuMn <sub>8</sub> Ox/ 60% $\gamma$ -Al <sub>2</sub> O <sub>3</sub> catalysts	229
Table 10.1	Activation energy for CO oxidation over different catalysts	236
Table 10.2	CO conversion vs temperature for various CO concentration in air	242
Table 10.3	X <sub>CO</sub> (%) vs W/F <sub>CO</sub> (g-cat.hr/g.mol) at various temperatures	245