Electronic Supplementary Material (ESI) for RSC Advances.

Highly active and stable nano NiO-MgO catalyst encapsulated by silica with core-shell structure for CO_2 methanation

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Fig. S1 CH_4 selectivity versus temperature on pure Ni and $Ni@SiO_2$

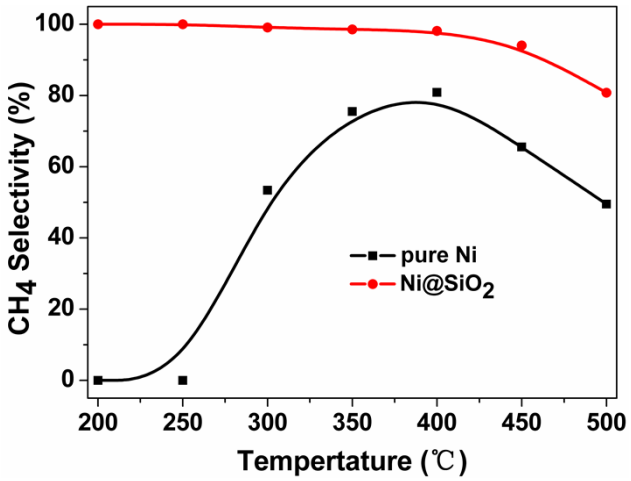

Fig. S2 CH_4 selectivity versus temperature on $Ni_{0.8}Mg_{0.2}O@SiO_2$-R and Ni(60%)/SiO_2-IMP

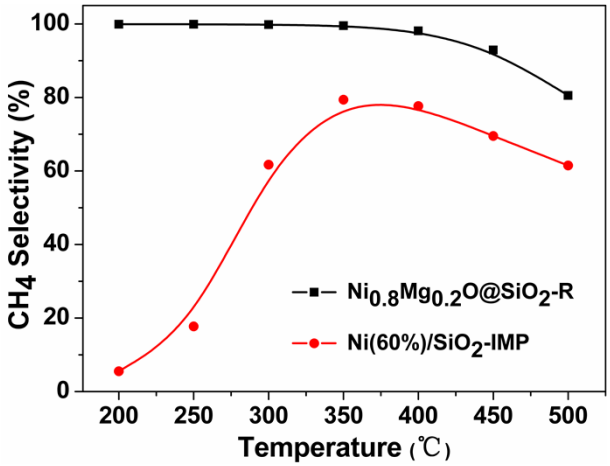

Fig. S3 The curves of the CH_4 selevtivity versus temperature at various gas hourly space velocities (GHSV) on $Ni_{0.8}Mg_{0.2}O@SiO_2$-R catalyst.

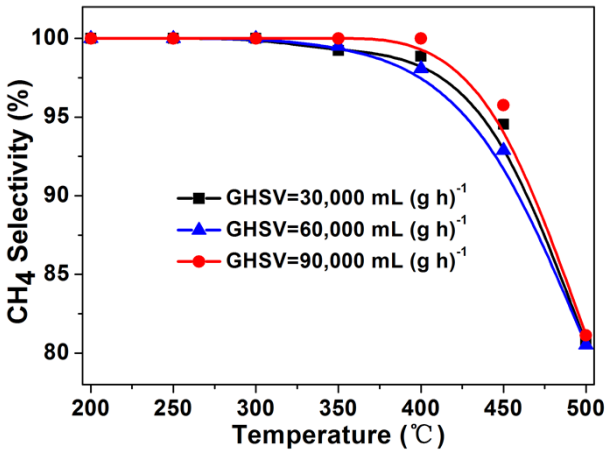

Fig. S4 TG and DSC curves of $Ni_{0.8}Mg_{0.2}O$-100h

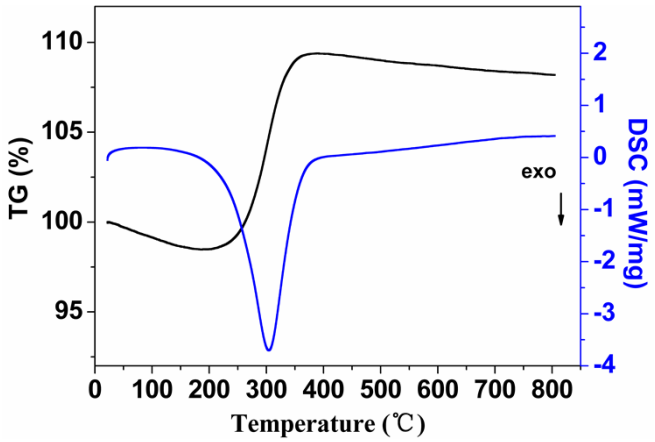

Table S1. Binding Energy(eV) of the surface elements of the core-shell Catalysts

Catalysts	$Ni2p_{3/2}$	Mg1s	Si2p	O1s
$Ni_{0.83}Mg_{0.17}O@SiO_2$	854.0	1302.9	102.1	529.2
$Ni_{0.8}Mg_{0.2}O@SiO_2$	854.2	1303.0	102.3	529.4
$Ni_{0.75}Mg_{0.25}O@SiO_2$	854.2	1303.1	102.2	529.2
$Ni_{0.5}Mg_{0.5}O@SiO_2$	854.4	1303.0	102.0	529.1
$Ni_{0.25}Mg_{0.75}O@SiO_2$	854.9	1305.2	102.1	529.8