Table S3: SER TGA cycle with regeneration in CO_2 and reduction between cycles ($100CO_2$-$50H_2$)

Step	Flow	Gas composition	Temperature	Time/rate
Reforming S/C = 3	875 ml/min	14/43/43 vol% $CH_4/H_2O/N_2$	650°C	35min
Heating to regeneration temperature	500 ml/min	100 vol% CO_2	650 to 925°C	9°C/min
Regeneration	500 ml/min	100 vol% CO_2	925°C	6min
Cooling to reduction temperature	500 ml/min	100 vol% N_2	925 to 850°C	3.5°C/min
Reduction	500 ml/min	50/50 vol% H_2/N_2	850°C	30min
Cooling to reforming temperature	500 ml/min	95/5 vol% N_2/H_2	850 to 650°C	3.5°C/min