Tailored Ni-MgO Catalysts: Unveiling Temperature-Driven Synergy in CH4-CO2 Reforming	
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Abstract: Technologies for carbon capture and utilization are crucial for diminishing CO: emis- sions and preventing global warming [1]. The CO2 reformation of methane (DRM), also referred to as "dry", is an attractive process for producing syngas (CO/H:) that directly uses greenhouse gas emissions of CO2 and CH [2]. The produced syngas has multiple uses, for example as feedstock, the Fischer-Tropsch process, fuel synthesis, chemical syn- thesis, carbonylation, and hydroformylation [2]. DRM has several advantages, including yielding a syngas ratio of unity that allows for selective modification of feed concentra- tions for additional chemical synthesis [3]. However, it is important to note that DRM is a strong endothermic process, which means that the reaction requires high temperatures. These high temperatures can cause sintering and agglomeration, which can deactivate the catalysts [4,5]. Despite this, numerous studies have found that Ni-based catalysts are ef- fective and promising DRM candidates due to their high availability, low cost, and high

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