

Session of [Focus Materialchemie](#) – Wednesday, **18.10.2023** 16:00 @ [Seminarraum Lehar 02](#) (TU-Wien, Getreidemarkt 9, BC, OG. 02) – [join us](#) on ZOOM (ID: 983 0066 2349)

Partial oxidation of methane (POM) on perovskites

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Partial oxidation of methane is a less energy consuming alternative to the highly endothermic steam reforming process to obtain synthesis gas from natural gas. The perovskites LaNiO_3 , LaCoO_3 , LaFeO_3 , LaMnO_3 and mixed nickel-cobalt perovskites are tested and the exsolution process responsible for forming the active metal or metal oxide species on the surface investigated with TPR and XRD. Additionally, BET and SEM has been applied to analyse the structure. Nickel supported on lanthanum oxide and cerium oxide were also tested for comparison. In-situ XRD measurements were carried out to investigate formation and destruction of phases during increase of temperature, exsolution and reaction. It is shown that the lanthanum nickel oxide catalyst has the best performance and nickel has two kinetic phases, leading to oscillations in the case of nickel supported on cerium oxide.