A promising spinel: We report the performance of spinels of the general formula $\text{Cu}_x\text{Mn}_{3-x}\text{O}_4$ in the Cu–Mn–O system as oxygen carriers in the chemical looping combustion (CLC) of CH$_4$ for the efficient and direct separation of CO$_2$. In light of the facile reversibility of various phases (see image), it can be concluded that Cu–Mn–O spinels are effective oxygen carriers for CLC and related applications.