

## **Mössbauer Investigation of the Kinetics of Internal Redox Reactions in Oxide Solid Solutions of the Type $(\text{Mg}_{1-x}\text{Fe}_x)\text{O}$**

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We have made a temperature dependent in-situ Mössbauer investigation of the kinetics of internal reactions in the System Mg-F-O. We confirm the predicted parabolic rate law for the internal oxidation of polycrystalline  $(\text{Mg}_{1-x}\text{Fe}_x)\text{O}$  solid Solutions with  $x = 0.01$ ,  $x=0.02$ , and  $x = 0.05$  for temperatures between about  $1000^\circ\text{C}$  and  $1100^\circ\text{C}$ . The reaction rate constant is found to be inversely proportional to the iron content. The internal reduction of a  $(\text{Mg}_{0.85}\text{Fe}_{0.15})\text{O}$  solid solution at  $1000^\circ\text{C}$ , i.e. for the formation of metallic precipitates, also follows the parabolic rate law. Furthermore, preliminary results are reported of an analogous internal reaction investigation in the System Al-Fe-O.