



Der Vorsitzende des Promotionsausschusses

E I N L A D U N G

Hiermit lade ich ein zum öffentlichen Promotionskolloquium von

Frau M.Sc. Anna Michaely
Anorganische Festkörperchemie
(Prof. Dr. Guido Kickelbick)

am

Montag, 09. Februar 2026, 14:00 Uhr s.t.

per Videokonferenz: Link für MS Teams: <https://bit.ly/3LLWIBp>
Raum für die Prüfung: Hörsaal II (Raum 0.03), Gebäude C4.3

Thema der Dissertation:

Mechanochemical reduction reactions of transition metal oxides with solid hydrides and their elemental counterparts

Transition metal oxides are usually reducible only at high temperatures, but this work explores their reduction at room temperature using mechanochemistry. As a model study the mechanochemical reduction of TiO_2 and Nb_2O_5 with LiH and NaH was applied, which partially reduced oxides with enhanced photocatalytic activity. In contrast, the reduction of V_2O_5 with these hydrides as well as with Na and Li, occurred in a self-sustaining reaction in the ball mill, yielding a complex mixture of various (alkali metal) vanadium oxides. A similar exothermicity was observed with Mg during the synthesis of MgV_2O_4 . The influence of milling intensity on microstructure and conductivity was also examined. Overall, the studies showed that alkaline earth metals and alkali metal (hydrides) are effective reducing agents in mechanochemistry, especially in exothermic reactions and when the metal is incorporated into the oxide structure.

Saarbrücken, 26. Januar 2026

Prof. Dr.-Ing. Georg Frey