Answer on Question #41368 – Chemistry – Inorganic Chemistry

Question:

In which of the following reactions, MgO is not formed:

- (1) Mg + CO₂ \rightarrow
- (2) Mg + dil. HNO₃ \rightarrow
- (3) Mg + NO \rightarrow
- (4) Mg + $B_2O_3 \rightarrow$

Answer:

The following reactions occur in each case:

- (1) $2Mg + CO_2 \rightarrow 2MgO + C$;
- (2) $4Mg + 10 \text{ dil. } HNO_3 \rightarrow 4Mg(NO_3)_2 + N_2O + 5H_2O$;
- (3) Mg + NO \rightarrow MgO + N₂
- (4) $3Mg + B_2O_3 \rightarrow 3MgO + 2B$

In cases (1), (3) and (4) metallic Mg reacts with oxides which results in MgO and reduced compound. Only in case (2) Mg reacts with diluted HNO₃, which oxidase Mg⁰ to Mg²⁺. (1), (3) are reactions of solid phase (Mg) with gases (CO₂ and NO respectively) and (4) is a reaction of two solid phases (Mg and B_2O_3). On the contrary, in case (2) reaction undergoes in solution, so the formation of MgO does not take place.

In the reaction (2) MgO is not formed.