Extraction of Mg from Dolomite

Aims of the Research Project:
- Study of thermal characteristics of Dolomite Ore.
- Possibility of using Shahreza dolomite to produce Mg via Silicothermic process.

Calcination Experiments in Muffle Furnace:
- Sintering observed at 1400°C.
- Increase in calcination degree from 63,5% to 96,41% with temperature increase from 800°C to 1400°C.
- Calcination at 800°C was not influenced by time.

SEM analysis of calcined dolomite

Magnesium Reduction in “Pidgeon” Furnace:

Tests Parameters:
- T= 1100, 1150 and 1200°C
- T= 30 Min
- P= 0,1 Torr
- Inert Gas= Nitrogen

XRD patterns of condensed Mg and remained briquettes

Ore Characteristics Observed by Transmission Microscope and DTA:

Phenomena Observed from DTA:
Three-stage decomposition of Dolomite at 800°C, 900°C and 1050°C.

Final Results from Pidgeon Mg-Reduction:
- Using vacuum and inert gas atmosphere, Mg production from Shahreza Dolomite is possible.
- Increase of reduction temperature from 1100°C to 1200°C leads to an increase in reduction degree; however, non-reacted Ca-Mg oxides have been always detected in briquettes after reduction.
- Due to the low amount of K₂O and Na₂O in Shahreza Dolomite ore, it has a good potential to achieve the high purity Magnesium.