



**UNIVERSITÀ
DI TRENTO**
Dipartimento di
Ingegneria Industriale

DII

Seminar

The influence of point defects on the sintering of magnesium oxide

February 21 2024, h. 12:00 AM

Seminar room, Polo Ferrari 2, Via Sommarive 9, Trento

Speaker: Yoed Tsur, Chemical Engineering, Technion, Israel Institute of Technology, Haifa, Israel

The influence of foreign and native point defects and associates in magnesium oxide on the sintering process is examined. We have introduced cations dopants into magnesium oxide that share similar sizes but possess varying charges, to minimize the direct impact of strain. Doping with acceptors greatly decreases the sintering temperature compared to the donors' effect. Enhancing the oxygen vacancies concentration creates an additional mechanism for sintering since the anion sublattice is the backbone of the material and oxygen ions diffusion is the rate-limiting step. Scandium doping, which enhances the concentration of metal vacancies, also has a sintering-promoting effect, yet a minor one. The fast-diffusing species in the undoped material are native vacancies associates, and their concentration is not affected by aliovalent dopants. This will be shown by a simple doping-factor approach. A variety of experimental results will be shown and discussed. This work is part of the dissertation of Rawan Halabi and is supported by the Pazi Foundation and the Ministry of Science, Israel.

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