



ADMITERE DOCTORAT

Sesiunea Septembrie 2022

Domeniul de doctorat: Ingineria Materialelor

Conducători de doctorat: cotutelă

Prof. dr. ing. Cornel SAMOILĂ

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TEME (TEMATICĂ) PENTRU CONCURS

TEMA 1: *Contribuții la reducerea oxidului de fier din pulberea metalică atomizată cu apă*

Conținut / Principalele aspecte abordate

- *Reducerea oxizilor de fier din pulberea atomizată cu apă cu diferiți agenți de reducere: H_2 , $CO+H_2$, CO*
- *Caracterizarea pulberii obținute*

Bibliografie recomandată:

1. Li, S.; Zhang, H.; Nie, J.; Dewil, R.; Baeyens, J.; Deng, Y. The Direct Reduction of Iron Ore with Hydrogen. *Sustainability* **2021**, *13*, 8866. <https://doi.org/10.3390/su13168866>
2. Wendel, J.; Manchili, S.K.; Hryha, E. *et al.* Oxide reduction and oxygen removal in water-atomized iron powder: a kinetic study. *J Therm Anal Calorim.* **2020**, *142*, 309–320. <https://doi.org/10.1007/s10973-020-09724-6>
3. Wendel, J.; Manchili, S.K.; Hryha, E.; Nyborg, L. Reduction of surface oxide layers on water-atomized iron and steel powder in hydrogen: Effect of alloying elements and initial powder state. *Thermochimica Acta*, **2020**, *692*, 178731, <https://doi.org/10.1016/j.tca.2020.178731>
4. Spreitzer, D.; Schenk, J. Reduction of Iron Oxides with Hydrogen—A Review. *Steel Research International*, **2019**, *90(10)*, 1900108, <https://doi.org/10.1002/srin.201900108>
5. Brinkman, L.; Bulfin, B.; Steinfeld, A. Thermochemical Hydrogen Storage via the Reversible Reduction and Oxidation of Metal Oxides, *Energy Fuels* **2021**, *35*, 18756–18767. <https://doi.org/10.1021/acs.energyfuels.1c02615>
6. Heidari, A.; Niknahad, N.; Iljana, M.; Fabritius, T. A Review on the Kinetics of Iron Ore Reduction by Hydrogen. *Materials* **2021**, *14*, 7540. <https://doi.org/10.3390/ma14247540>
7. Zheng, H.; Spreitzer, D.; Wolfinger, T. *et al.* Effect of Prior Oxidation on the Reduction Behavior of Magnetite-Based Iron Ore During Hydrogen-Induced Fluidized Bed Reduction. *Metall Mater Trans B* **2021**, *52*, 1955–1971. <https://doi.org/10.1007/s11663-021-02215-5>

Note / Preconții / Obs.: *Studii absolvite: Inginerie, Fizică, Chimie*

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