

Properties and reactivity of silicate melts: thermodynamic modeling. Application to valorization and engineering of metallurgical slags

*SMART PhD 2022 - Co-financed by UNISMART
(Proposer: OPIGEO Srl; UNIPD reference: Prof. Gilberto Artioli)*

The careful planning of the reuse and the recycle of the metallurgical slags in terms of circular economy and towards the fulfilling of the zero-waste objectives, implies a deep knowledge of the reactivity of the existing industrial products and by-products. The project aims to investigate the reactivity of the industrial products available in the greater Veneto area, by means of state-of-the-art thermodynamic modeling, mainly using the FactSage software (Bale et al. 2016, Pelton 2018). The aim is (1) to physically and chemically characterize the available slags, (2) to model the thermodynamics of their reactivity at different P-T conditions starting from the measured composition, but also considering appropriate compositional amendments/additions, and (3) to propose their optimal re-use, formulation, and treatment conditions.

References

- Bale C.W., E. Bélisle, P. Chartrand, S. A. Deckerov, G. Eriksson, A.E. Gheribi, K. Hack, I. H. Jung, Y. B. Kang, J. Melançon, A. D. Pelton, S. Petersen, C. Robelin. J. Sangster, P. Spencer and M-A. Van Ende, FactSage Thermochemical Software and Databases - 2010 - 2016, Calphad, vol. 54, pp 35-53, 2016 <www.factsage.com>
- Pelton, A.D., 2018. Phase diagrams and thermodynamic modeling of solutions. Academic Press.

