



13 May 2019

Secondary Lead Conference – Basic tools of metallurgical thermodynamics and their application.

A short course discussing the basic tools of metallurgical thermodynamics and their application, with a special focus on lead recycling will be held at the Secondary Lead Conference being held at The Westin Nusa Dua, Bali Monday 2 and Tuesday 3 September 2019.

The course will be held on Monday 2 September 2019, 1.30 pm – 3.00 pm. All delegates of the 6th International Secondary Lead Conference will be able to attend.



Short Course Abstract

The starting point for the understanding of any metallurgical system is often the phase diagram. We discuss how to interpret a phase diagram, which type of information can be retrieved from it, as well as its link to the Gibbs energy description in thermodynamic software. Further it is shown how these software tools allow to make calculations for multicomponent processes.

Next, we discuss the thermodynamics of lead production and how recycling processes make clever use of these principles. The thermodynamics of lead production from primary resources have long been established, but secondary smelters are facing different challenges. Classical roasting-blast furnace, as well as more recent direct smelting processes, deal with sulfur in concentrates (PbS) by forming SO₂ and capturing it in sulfuric acid plants.

Secondary production typically starts from battery fractions containing Pb, PbSO₄, and PbO₂. The strategy for sulfur is rather different: S is captured in a separate phase prior or during smelting. Secondary lead smelting has its own multicomponent slag system, which is very robust, but because of its robustness, not always fully understood nor optimally applied. As Fe and Na₂CO₃ are added to generate sulfides and sulfates, this requires the understanding of more than the Pb-O-S system. Moreover, the different phases (slag, matte, lead) are not strictly oxidic, sulfidic, or metallic. A number of relevant phase diagrams will be discussed, as well as the Ellingham stability diagrams of oxides and sulfides.

Program inquiries

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6th International Secondary Lead Conference

<https://secondaryleadconference.com>