5th Edition of International Conference on
Polymer Science and Technology

10th International Conference and Expo on
Separation Techniques

July 30-31, 2019 | Amsterdam, Netherlands

Zhancheng Guo
University of Science and Technology Beijing, China

Co-Authors
Jingtao Gao, Zhe Wang and **Xiaochun Wen**
University of Science and Technology Beijing, China

Separation of precipitated phase from melt mixture by super-gravity technology

The essence of metallurgical processes consists mainly of the reaction and separation. Generally, mass transfer and phase separation are the restrictive links in high-temperature metallurgical processes. To effectively separate solid phases from melt mixtures or inclusion phases from metal melts, an innovative approach of super-gravity technology was proposed, which has the characteristics of enhancing the processes of mass transfer and phase migration. Super-gravity technology may be applied in pyro-metallurgy process, such as concentration of valuable resources from molten slag, purification of metallic melts, recovery of metal from molten slag, separation of valuable metals from electronic wastes, and so on. For instance, super gravity is an effective method to separate rutile (TiO_2) phase from molten Ti-bearing slag, vanadium spinel [Fe_2VO_4] phase from molten V-bearing slag, suanite ($Mg_2B_2O_5$) phase from molten B-bearing slag, and rare earth phases from molten Re-baering slag, and so on. In addition, the inclusions in liquid metal such as liquid steel could be efficiently removed by super gravity. Driving by a centrifugal super-gravity force, metals such as Fe, Cu and Zn could be rapidly recovered from steelmaking molten slag, copper-making molten slag and zinc-coating molten slag, respectively. Moreover, super-gravity technology can be used to separation of Pb, Sn, Al, Zn, Cu and precious metals from waste printed circuit boards in heating process. Therefore, separation of the precipitated phase from its containing melt can be improved immensely in super gravity field, and the metallurgical processes can be achieved green and high-efficient.

Biography

Zhancheng Guo is professor and director of the State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing, China. He engaged in research on metallurgical engineering for 30 years.

zcguo@ustb.edu.cn