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Editorial

Hydrometallurgy

Suresh K. Bhargava [1,*], Mark I. Pownceby [2,*] and Rahul Ram [1,*]

[1] Centre of Advanced Materials & Industrial Chemistry, School of Applied Sciences, RMIT University, GPO Box 2476, Melbourne, VIC 3000, Australia

[2] CSIRO Mineral Resources, Private Bag 10, Clayton South, VIC 3169, Australia

* Correspondence: suresh.bhargava@rmit.edu.au (S.K.B.); mark.pownceby@csiro.au (M.I.P.); rahul.ram@rmit.edu.au (R.R.)

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Hydrometallurgy, which involves the use of aqueous solutions for the recovery of metals from ores, concentrates, and recycled or residual material, plays an integral role in the multi-billion dollar minerals processing industry. It involves either the selective separation of various metals in solution on the basis of thermodynamic preferences, or the recovery of metals from solution through electro-chemical reductive processes or through crystallisation of salts. There are numerous hydrometallurgical process technologies used for recovering metals, such as: agglomeration; leaching; solvent extraction/ion exchange; metal recovery; and remediation of tailings/waste. Hydrometallurgical processes are integral across various stages in a typical mining recovery and mineral processing circuits be it *in situ* leaching (where solution is pumped through rock matrices); heap leaching (of the ROM or crushed ore); tank/autoclave leaching (of the concentrate/matte obtained from floatation); electro-refining (of the blister product from smelting routes); and the treatment of waste tailings/slags from the aforementioned processes. Modern hydrometallurgical routes to extract metals from their ores are faced with a number of issues related to both the chemistry, geology and engineering aspects of the processes involved. These issues include declining ore grade, variations in mineralogy across the deposits and geo-metallurgical locations of the ore site; which would influence the hydrometallurgical route chosen. The development of technologies to improve energy efficiency, water/resources consumption and waste remediation (particularly acid-rock drainage) across the circuit is also an important factor to be considered. Therefore, there is an ongoing development of novel solutions to these existing problems at both fundamental scales and pilot plant scales in order to implement environmentally sustainable practices in the recovery of valuable metals.

The Present Issue

We are delighted to be the Guest Editors for this Special Issue of Hydrometallurgy published in the journal *Metals*. With a total of 22 papers covering both fundamental and applied research, this issue covers all aspects of hydrometallurgy from comprehensive review articles [1,2], theoretical modelling [3] and experimental simulations [4], surface studies of dissolution mechanisms and kinetics [5], pre-treatment by roasting [6] or carbonation [7] to enhance recovery, aqueous carbonation as a means of CO_2 sequestration [8], biological systems [9–11], solvent and liquid-liquid extraction [12–14], nanoparticle preparation [15,16] and the development of novel and/or environmentally sustainable methods for the treatment of wastes and effluents for the recovery of valuable metals and products [17–22]. The number and of quality of submissions makes this Special Issue of *Metals* the most successful to date. As Guest Editors, we would especially like to thank Dr. Jane Zhang, Managing Editor for her support and active role in the publication. We are also extremely grateful to the entire staff of the *Metals* Editorial Office, who productively collaborated

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