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Fundamental behavior of metals in the presence of non-conventional solvents

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Understanding of fundamental aspects of metal behavior is a key component of controlling the separation and purification process. This knowledge is based on speciation and oxidation state information leading to numerical thermodynamic parameters [1-3]. Surprisingly, there are still chemical systems with unknown stability constants of metals in the generic mineral acids. However, this situation becomes more complex when a new class of compounds is introduced, so-called non-conventional solvents [4]. This new approach utilizes application of ionic liquids and deep eutectic mixtures. The former is a salt with a melting temperature below 100 °C and they are composed of discrete ions. The latter is a mixture of at least two compounds, resulting in a melting temperature depression in comparison with that of individual moiety, and they consist of hydrogen bond donors and acceptors. These new systems also can be hydrophobic and applicable for metal extraction [5-7]. Recent results on In, Tl, Rh, and Ir behavior in the presence of non-conventional solvents will be discussed.

References

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Primary author: Dr TERESHATOV, Evgeny E. (Texas A&M University)

Co-author: Prof. FOLDEN III, Charles M. (Texas A&M University)

Presenter: Dr TERESHATOV, Evgeny E. (Texas A&M University)

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