

# YOURS 2019

## ABSTRACT PROCEEDINGS

YOUng ResearcherS Conference 2019

26 - 27 March 2019

Ministry of Education, Science and Technological Development

Editorial Board of Journal of Applied Engineering Science

Belgrade Fair



# **YOURS 2019**

## **YOUnG ResearcherS Conference 2019**

**26 – 27 March 2019 – Belgrade Fair**

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## THERMODYNAMIC MODELING OF PB/AG - JAROSITE SULFIDATION FOR VALUABLE METALS RECOVERY

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**Summary:** In this paper thermodynamic modeling of sulfidation of non-standard Pb/Ag - Jarosite is shown, in order to propose optimal technological process for valuable metals recovery. Given the current state of natural resources, demand and consumption, sustainable production of critical metals, especially technological metals, is focus of this research. Neutral leaching residue, Pb/Ag - Jarosite, as a primary zinc production by-product is usually disposed at landfills, despite the fact that contains recyclable base (Zn, Pb, Cu), precious (Ag) and technological, critical metals (In, Ge, Ga). Thermodynamic data for detailed sulfidation behavior of technological metals contained in Pb/Ag - Jarosite were calculated using HSC Chemistry Software v. 9.0 in order to recommend optimal recycling process conditions. The main objectives were determination of temperature effect, input material/sulfidation agent ratio and modeling of phase stability diagrams of chosen technological metal sulfides. Synergetic metallurgy activities including utilization of primary and secondary raw materials can be result of this process modeling.

**Keywords:** jarosite, thermodynamic modeling, recycling, technological metals, sulfidation.



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