

**DEVELOPMENT OF ADVANCED MATERIALS MADE FROM  
GEORGIAN RESOURCES – INCLUDING FROM INDUSTRIAL WASTE;  
AND LASTLY**

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We can propose various approaches for remediation/rehabilitation of the mining sites by protecting the environment, technologies aiming at an improvement of resource efficiency. Gold-arsenic, arsenic and gold-antimony deposits in Georgia have a significant impact on the economy of the country.

Bacterial or hydrochemical processes will allow us to extract arsenic compounds from realgar ( $\text{As}_4\text{S}_4$ )-or piment ( $\text{As}_4\text{S}_6$ ), arsenopyrite  $\text{FeAsS}$  ores of Georgia and from the residuals of pyrometallurgical processes. Isolated As compounds will be used for the production of the polymer composites with specific properties [3]:

1. New cationic-anionic complexes and chelates with different organic Ligands (exhibit anti-microbial and fungicide properties).

2. Micro- or nano-hybrids such as polymer + filler (Nanohybrid of the PP/EPDM +

Arsenic type Nanohybrid of the epoxy + Arsenic type) in the purpose to develop Polymer Based Materials (PBMs) with improved Tribological properties.

3. Biomedicalnano composites used for production of antihelmints, anti carcinogenic polymers.

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[2] R. Gigauri, N. Gigauri & N. Lekishvili, Obtaining “white arsenic” from arsenic industrial waste. International conference “Compounds and materials with specific properties based on industrial waste, secondary and natural recourses”. Book of Abstracts. Tbilisi, 2010.

[3] H. Barbakadze, W. Brostow, M. Gakhutishvili, R. Gigauri, D. Gventsadze, N. Lekishvili & T. Lobzhanidze, Inorganic-organic hybrid materials from low-cost industrial waste and secondary resources, POLYCHAR 17 World Forum on Advanced Materials, April 20-24, 2009, Rouen