

## **Biosorption of Gold from Chloride Media in a Simultaneous Adsorption-Reduction Process**

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**Abstract :** Conventional hydrometallurgical processing of metals involves the use of large quantities of toxic chemicals. Realizing a need to develop sustainable technologies, extensive research studies are being carried out to recover and recycle base, precious and rare earth metals from their pregnant leach solutions (PLS) using green chemicals/biomaterials prepared from biomass wastes derived from agriculture, marine and forest resources. Our innovative research showed that bio-adsorbents prepared from such biomass wastes can effectively adsorb precious metals, especially gold after conversion of their functional groups in a very simple process. The highly effective 'Adsorption-coupled-Reduction' phenomenon witnessed appears promising for the potential use of this gold biosorption process in the mining industry. Proper management and effective use of biomass wastes as value added green chemicals will not only reduce the volume of wastes being generated every day in our society, but will also have a high-end value to the mining and mineral processing industries as those biomaterials would be cheap, but very selective for gold recovery/recycling from low grade ore, leach residue or e-wastes.

**Keywords :** biosorption, hydrometallurgy, gold, adsorption, reduction, biomass, sustainability

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