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SYNTHESIS OF Au-NANOPARTICLES USING GOLD RECOVERED
FROM ELECTRONIC WASTE

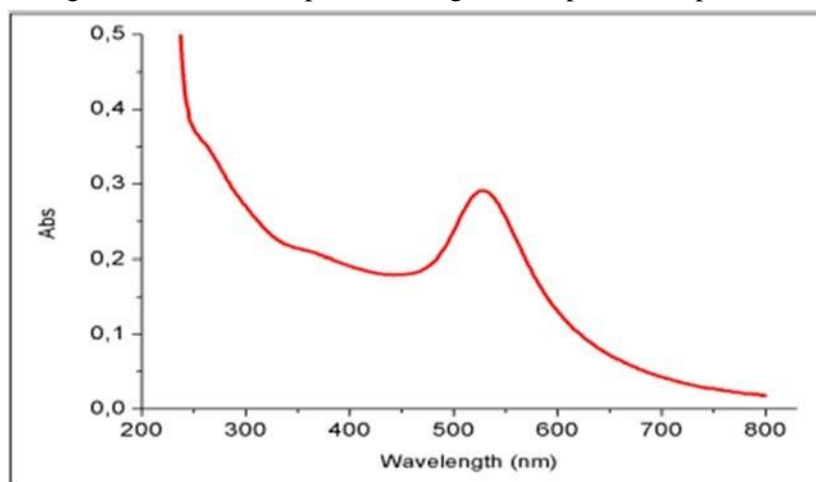
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Abstract. The worldwide production of electronic waste was approximately 44.7 million tons in 2016, and production has grown by approximately 4% per year. Gold is found in small quantities on printed circuit boards (150 ppm), however this amount is 10 times higher than that found in gold rich ores.

Based on the presented above, gold was extracted from printed circuit boards by hydrometallurgical process using *aqua-regia* and then cemented with copper foil. After a purification process the extracted gold was transformed in chloroauric acid and then converted to nanoparticles by the Turkevich method. The nanoparticle suspension obtained has an intense red colour with absorbance at 525nm, as can be seen on Figure 1. Average particle size was determined as 38nm, and Zeta potential of -34.3 mV. The produced suspension remains stable for more than one month at room temperature.

Figure 1. UV-visible spectrum for gold nanoparticle dispersion in water.



References

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