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**SYNTHESIS OF NANO AND MICRO PARTICLES  $\text{CuSbSe}_2$  -  
ONE OF HIGH RESPECTIVE SOLAR CELL COMPONENTS**

**NANO VE MİKRO PARÇACIKLAR  $\text{CuSbSe}_2$  SENTEZİ - YÜKSEK  
İLGİLİ GÜNEŞ HÜCRE BİLEŞENLERİNDEN BİRİ**

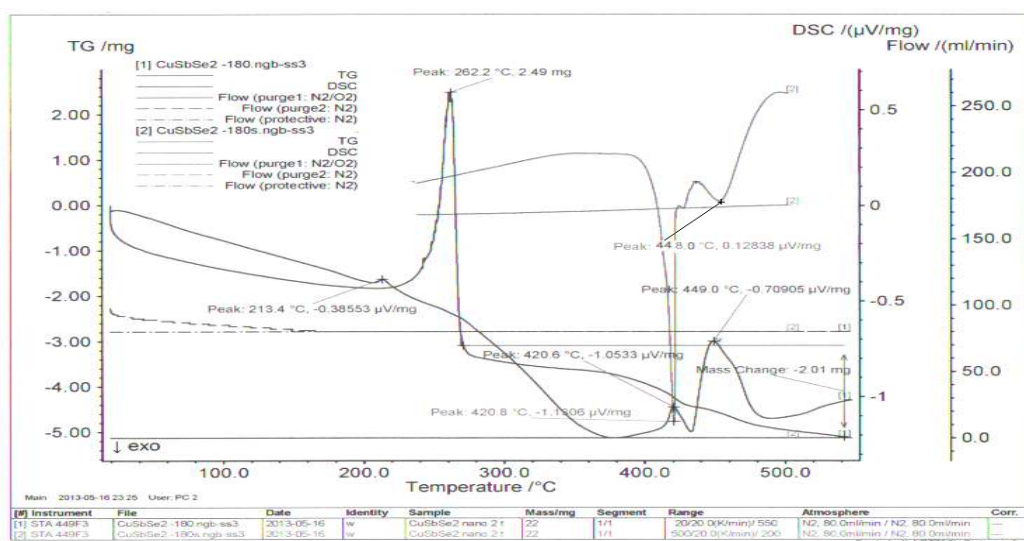
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**ABSTRACT**

The mix potassium antimonytriate with chloride of copper (I) is dissolved in ethylene-glycol and to it increases as seleniruyushchy reagent selenidesulphate sodium. The experimental ware in a teflon ditch is located in the microwave electric oven. Test within 10 hours at 180<sup>0</sup>C to temperature remains in the furnace. The received deposit is filtered via the glass filter, washed out by the diluted solution of hydrochloric acid, ultrapure water, at last, ethyl alcohol, is dried up at 60-70 <sup>0</sup>C in vacuum. The exit makes 92-94%. Chemical, thermographic and morphological analyses CuSbSe<sub>2</sub> are executed, and is established that crystals of connection are presented in the form of nanocores.



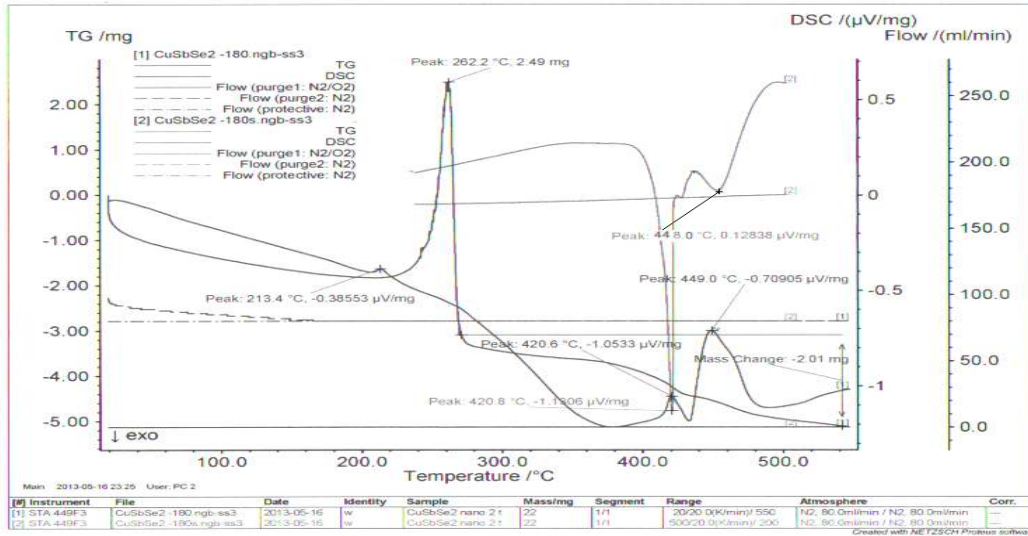
**Figure 1.** Thermogravimetric and differential and calorimetric analyses of nanoconnection of CuSbSe<sub>2</sub> received at 180<sup>0</sup>C within 10 hours.

**Keywords**

Antimony copper selenide, solvothermal method, chemical analysis, thermographic analysis, nanorod.

## ÖZET

Kaliumantimoniltartrat ile bakır (I) klorür karışımı etilen glikol çözülerek üzerine selenidleşdirici reaktif olarak sodyum selenesulfat çözeltisi ilave edilir. Deney kabı teflon küvetde Speedwave four mikrodalga elektrik ızdırıcısında 180°C de 10 saat süreyle saklanır. Alınan çöküntü süzülür, zayıf hidroklorik asit solüsyonu, ultra saf su ve alkolle yıkandıktan sonra 60 -70°C de vakumda kurutulur. Çıxım 92 - 94% teşkil etmiştir. Alınan CuSbSe<sub>2</sub>-in kimyasal, termoqrafik, morfolojik analizleri yapıldı ve kristaller nanoçubuqdan ibaret olduđu belirlenmiştir.



**Şekil 1:**180°C-de ve 10 saat süreyle alınmış CuSbSe<sub>2</sub> nanobirlaşmäsının termoqravimetrik ve ayırıcı kalorimetrik analizi

## Anahtar Kelimeler

Bakır sürme selenid, solvotermal yöntem, kimyasal analiz, termoqrafik analiz, nanoçubuq.

## Kaynaklar / References

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