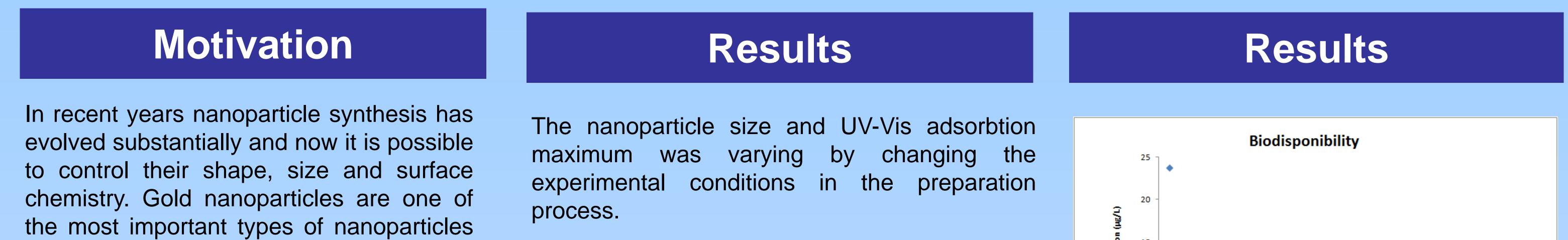


# Popcorn Shaped Gold Nanoparticles with absorbance in NIR

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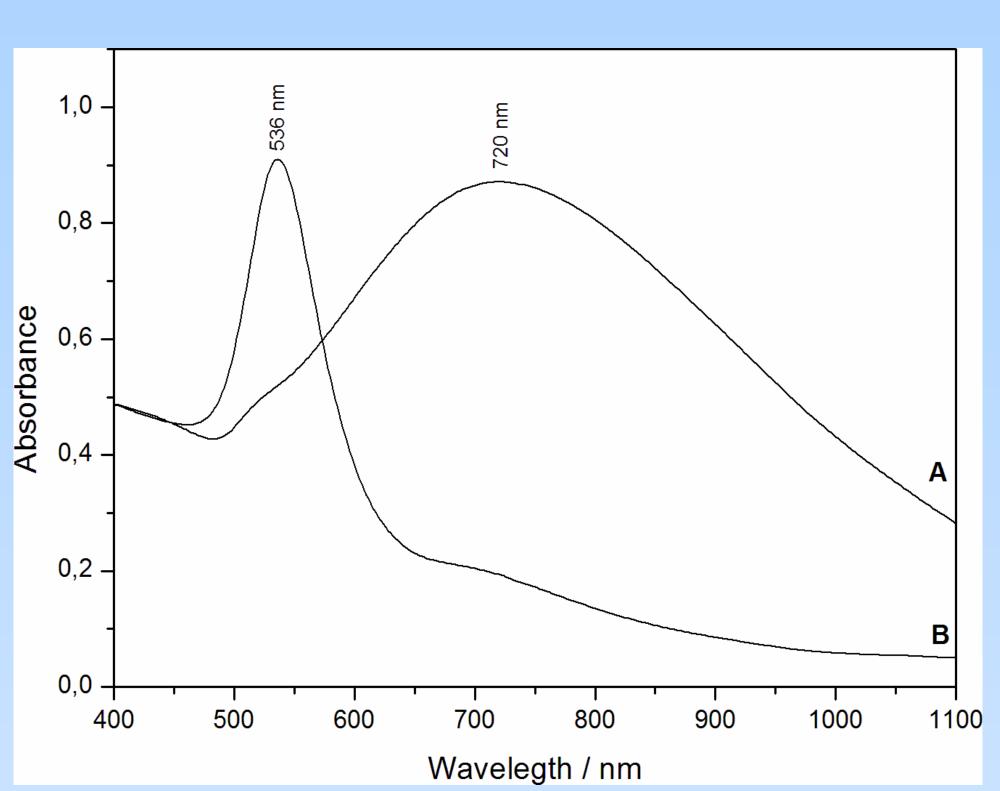
due to their applicability in live tissue as contrast agents, delivery vehicles, therapeutics etc., even though some of the coating agents can cause side effects (e.g. renal complications) [1,2].

### Methods

The nanoparticles were prepared at room temperature using as reducing agent hydroxylamine.

The characterization of the nanoparticles were carried out by using UV-Vis, TEM and surface-enhanced Raman scattering (SERS) spectroscopy.

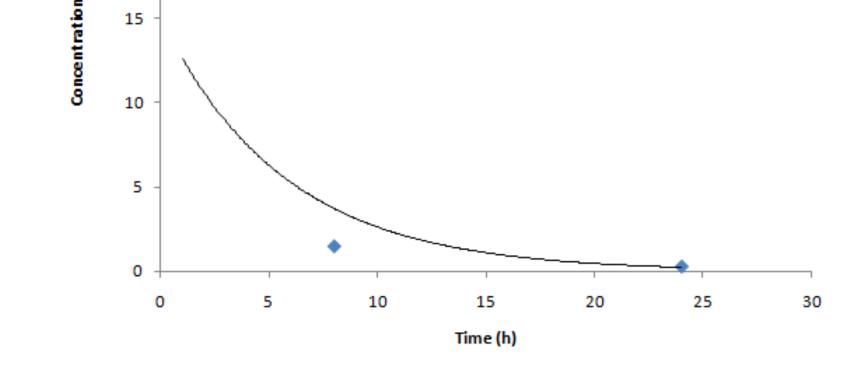
Before the injection in the laboratory rats, the nanoparticles were covered with albumin in order to stay stable in physiologic saline solution.



**Fig.2:** UV-VIS spectra of hydroxylamine reduced gold nanoparticles: big (A) and small (B) particles.

Results

The smaller nanoparticles have shown an at least ten times higher SERS activity than the conventional citrate reduced gold nanoparticles [4].



**Fig.4:** Circulation time of the popcorn shaped gold nanoparticles in the vascular system.

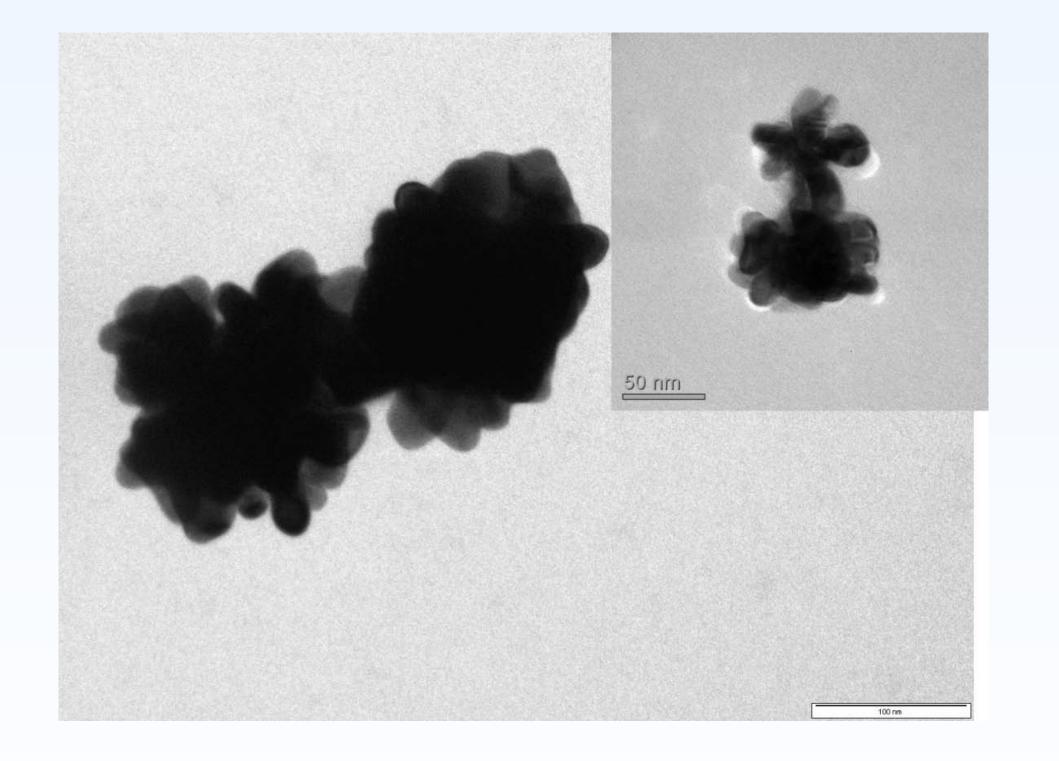
## Conclusion

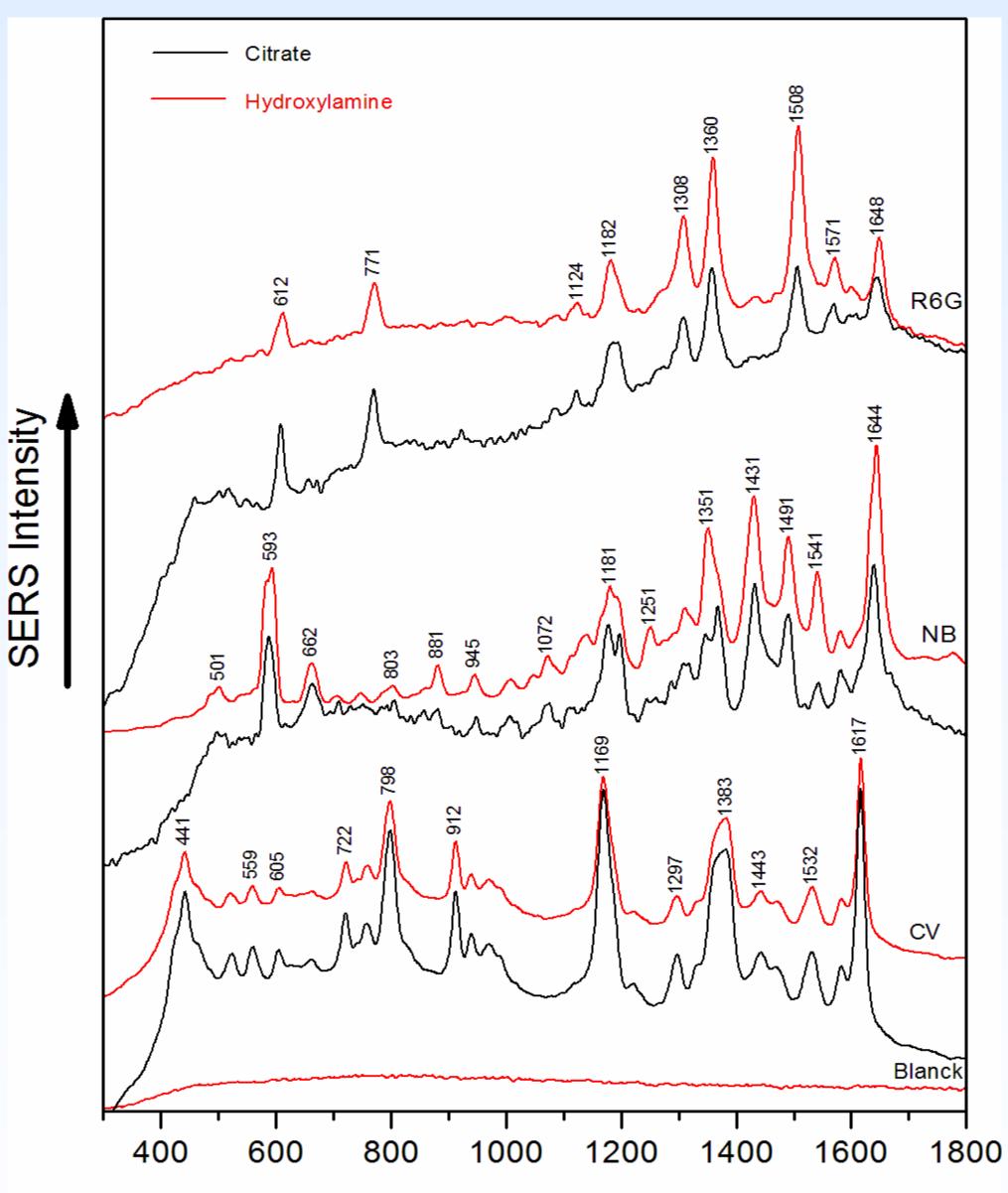
The possibility to modify the surface with highly biocompatible molecules, the proposed gold nanoparticles could become important transporting vehicles for drugs like heparin and C-reactive protein. Furthermore, due to the fact that these nanoparticles can be functionalized with different ligands and their absorption maximum is in the NIR region they should provide a viable option for photothermal therapy too.

The collected blood was analyzed with ICP-MS in order to define the gold nanoparticles biodisponibility in the blood [3].

#### Results

The popcorn shape of the nanoparticles was revealed by the TEM measurements (**Fig. 1**)





## Acknowledgments

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#### References

[1] G. Tan, M. A. Onur, N. Saglam., Turk J Biol, **2012**, 36, 607-621

[2]

**Fig. 1:** TEM images of hydroxylamine reduced gold nanoparticles.

Raman Shift / cm<sup>-1</sup>

**Fig.3:** SERS spectra of Crystal Violet (CV),Niel Blue (NB) and Rhodamine 6G (R6G) obtained by using hydroxylamine (CV 10<sup>-7</sup>M, NB 5x10<sup>-7</sup>M, R6G 10<sup>-7</sup>M) and citrate (CV 10<sup>-6</sup>M, NB 10<sup>-6</sup>M, R6G 10<sup>-6</sup>M) reduced gold colloids. [3] A. Scheffer, C Engelhard ,M. Sperling,W. Buscher, Anal Bioanal Chem 2008, 390,249–252

[4] P. C. Lee, D. Meisel, J. Phys. Chem. **1982**, 86, 3391-3395