SCUOLA NORMALE SUPERIORE

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1° Year Ph.D Report

PhD student: **Agata Zamborlin**
Supervisor: **Dott. Valerio Voliani**

20/10/2020

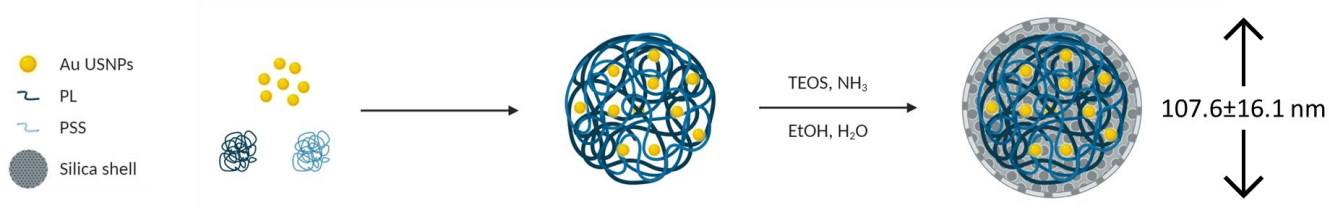
National Enterprise for nanoScience and nanoTechnology

NEST

Courses and activities

Course/activity	Hours
Introductory Quantum Physics	40
Physics of the Living Cell	45
Fundamentals of Biophysics at the Nanoscale	60
Lettorato di lingua inglese 4° livello (listening/speaking) –attendance only	20
Ciclo di seminari- Biophysical sciences – attendance only	45
PhD school "Scientific Data Analysis School 2019" 25-28 novembre 2019	27

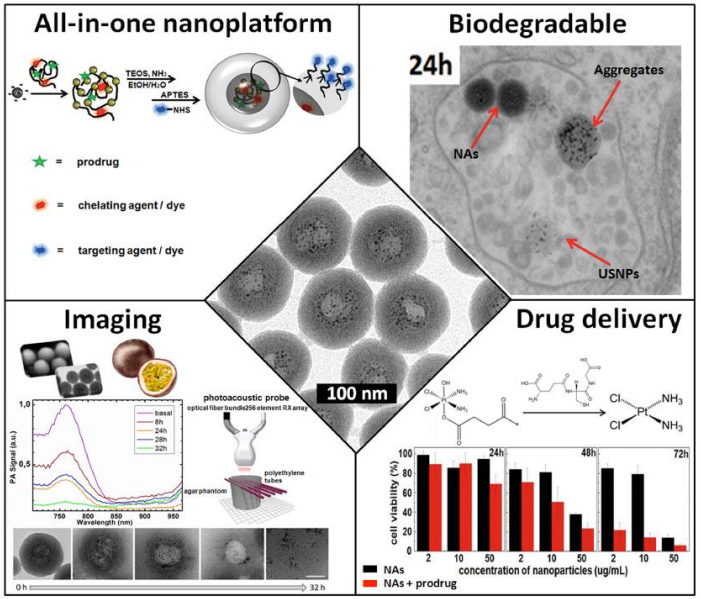
Passion fruit-like nano-architectures: past and present



Created with BioRender.com

- Versatile and easy synthesis
- Low cost
- Scale up
- Biodegradable in 48h
- Possibility to encapsulate drugs or dyes
- Renal excretion after IV administration
- Faecal excretion after IN administration

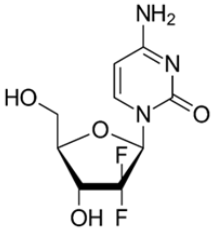
*Mapanao, A.-K., Giannone, G., Summa, M., Ermini, M. L., **Zamborlin, A.**, Santi, M., Cassano, D., Bertorelli R. and Voliani, V. Nanoscale Adv., 2020,2, 3815-3820*



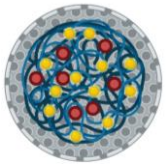
Cassano, D., Pocoví-Martínez, S., Voliani, V., Bioconjug Chem. 2018, 29(1):4-16.

Passive Gemcitabine loading

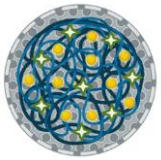
- Synthetic protocol optimization
- Characterization optimization



Future perspectives



Passive Gemcitabine loading in AuNAs



Covalent Gemcitabine loading in AuNAs

Possible strategy combinations:

- Gemcitabine-cisPlatin co-therapy
- Gemcitabine-Hyperthermia co-therapy