**COMPLEXES OF POLYELECTROLYTES WITH QUANTUM DOTS**

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**THE GOAL**
Formation of nanocapsules by sequential adsorption of oppositely charged polyelectrolytes with quantum dots.

**MATERIALS**
Two different polyelectrolyte couples were used:
- Cationic poly(allylamine hydrochloride) (PAH) with anionic poly (sodium styrene sulfonate) (PSS)
- Cationic poly-L-lysine hydrobromide (PLL) with anionic poly-D-glutamic acid sodium salt (PGA) or PGA pegylated (PGA-y-PEG)

Negatively charged CdTe quantum dots applied in complexes with polyelectrolytes were purchased from PlasmaChem GmBH (Germany).

**METHODS**
- Dynamic light scattering (DLS) - determination of size and zeta potential of complexes
- Atomic force microscope (AFM) measurements of complexes deposited on mica
- Flow cytometer – determination of cytotoxicity of the capsules

**RESULTS**

**METHODS**

**Dynamic Light Scattering**

**Atomic Force Microscope**

IN VITRO STUDIES
CdtTe nanoparticles, plain capsules (PGA/PLL, PGA-y-PEG/PLL, ) and CdTe-labeled capsules (PGA/PLL/CdTe, PGA-y-PEG/PLL/CdTe) were examined on flow cytometer in respect of their influence on B-lymphoblastoid (B-LCL) cell line proliferation. Control sample was incubated only with cell culture medium and antibiotics.

**CONCLUSIONS**
- Successful production of different polyelectrolyte – quantum dots fluorescent complexes of sizes within range 20 – 75 nm
- Plain capsules do not affect B-LCL cells proliferation, thus they are biocompatible at all concentrations tested
- QDs stop affecting the proliferation of B-LCL cells at a concentration of 0.08 μg/ml
- PGA/PLL capsules labelled with QDs stop affecting the B-LCL cell proliferation at a dilution of 1:400, which corresponds with 0.25 μg/ml CdTe concentration

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