MAF 12

12th International Conference on Methods and Applications of Fluorescence

SPECTROSCOPY, IMAGING AND PROBES

Strasbourg, France
September 11-14, 2011

BOOK OF ABSTRACTS

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Conference program

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rofloxacin detection

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nrofloxacin, –a broad-spectrum
widespread use in human and
followed in our group is the
r Resonance Energy Transfer
FRET depends on the distance
nd a suitable acceptor molecule
elled with appropriate **D**–**A** pairs
p between $\mathbf{D}_{em}$ and $\mathbf{A}_{abs}$. In this
= 705/793 nm and τ_L = 0.92 ns
dine), with $\lambda_{abs}/\lambda_{em}$ = 450/584 nm
ection in the near-infrared (NIR)
A pair is that the Ru(II) complex
llows for a proper discrimination
that arising from direct excitation
minimize the Ru(II) quenching by
into silica nanoparticles (NPs) of
to the FRET scale (typical FRET
timum amount of **D** luminophore
ution of Ru(II) complexes can be
during the Stöber synthesis of the
II) distribution affects the FRET
NIR-labelled enrofloxacin.

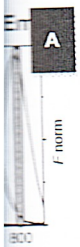

Figure 1. *Left*: schematic representation of the novel NP-based Ru(II)-cyanine FRET system described herein and; *right*: absorption and emission spectra of the **D**–**A** pair.

e and Innovation (Ramón y Cajal
n Reintegration Grant (NANOLUM

09) 235. [2] S. Zhu, et al., *Top Curr*
44. [4] N.L. Vekshin, "*Energy Transfer*
shington (1997). [5] D. Zhang, et al.,

Fluorescence spectroscopy and spectral modeling as a tool for study of interaction of nanoparticles with biomacromolecules. Plant cell walls

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Quantum dots (QDs) are increasingly applied in plant science, as markers for the cells or their cell walls. In a plant, the cell wall is a first target place for external agents. We studied interaction of CdSe quantum dots (QDs) with cell walls isolated from a conifer - *Picea omorika* (Panč) *Purkyně* branch. Fluorescence and FT-IR spectroscopy and epifluorescence microscopy have been performed in order to study interaction of the QDs with the whole cell wall, as well as with its individual constituent polymers: cellulose, lignin and hemicellulose. The isolated cell wall is an appropriate object for study of the interactions with nanoparticles. The aim of the study was to see whether the QDs induce structural changes in the cell wall, as well as to find out which kind of interaction between QDs and cell wall's occurs. We also investigated affinity of cell wall polymers for binding quantum dots. The results show that in the cell wall, CdSe quantum dots predominantly binds to cellulose, through OH groups and to lignin, through the conjugated C=C/C-C chains. The differences in interaction of wet and dry CWs with QDs/chloroform were also perform. We treated cell wall with water as hydrophilic and chloroform as hydrophobic solvent. In the reaction of the dry cell wall sample with QDs/chloroform, hydrophobic interactions are dominant. When water was added after QDs/chloroform, hydrophilic interactions enable a partial reconstruction of the C=C chains. The results have an implication on the employment of the QDs in plant bio-imaging.

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