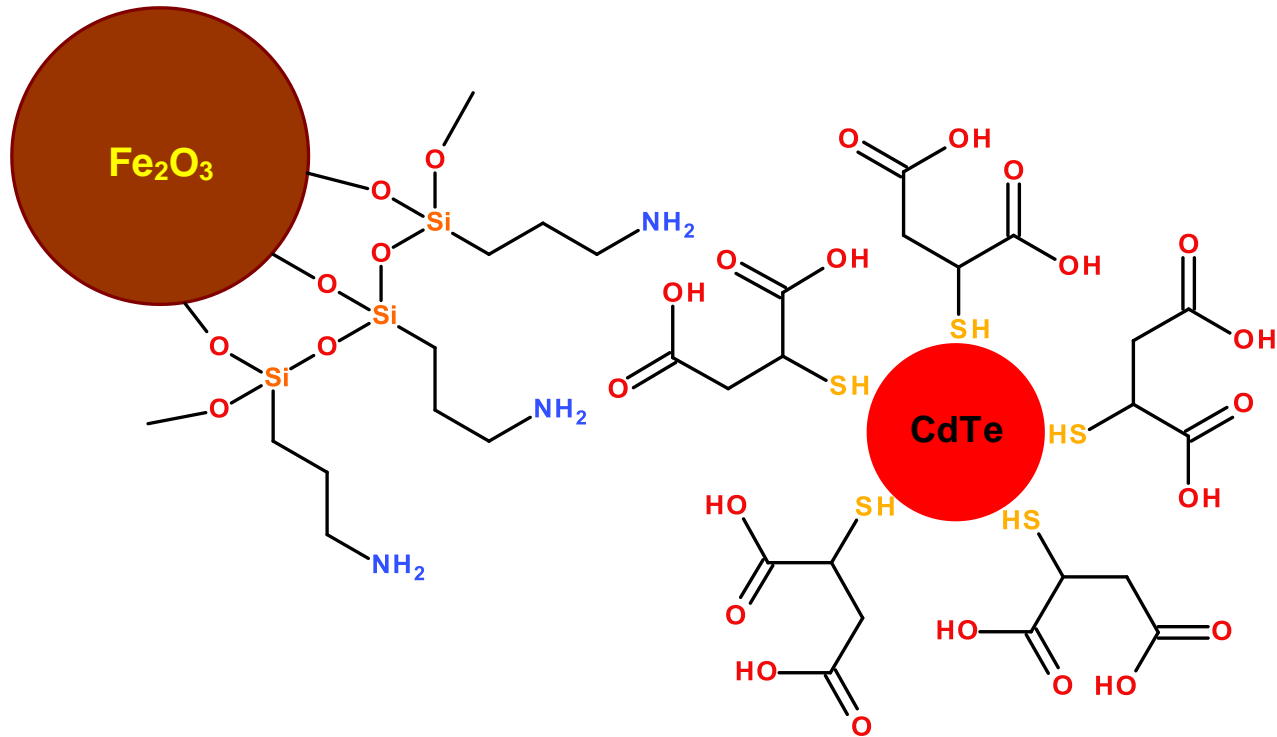


Název: Magnetické částice v kombinaci  
s kvantovými tečkami

Školitel: Doc. RNDr. Pavel Kopel, Ph.D.

Datum: 8.11.2013

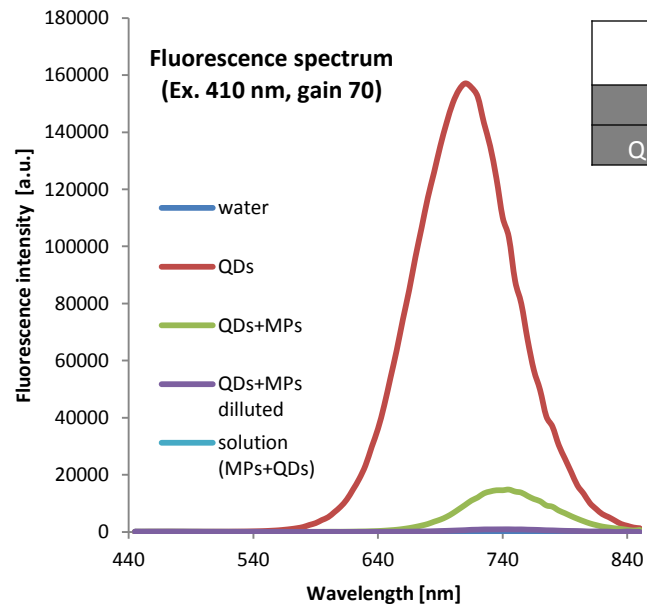
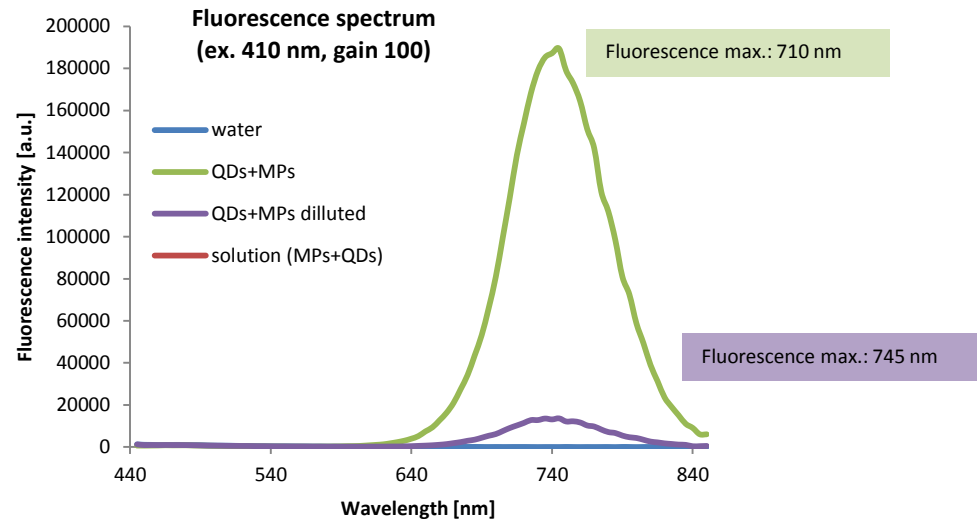
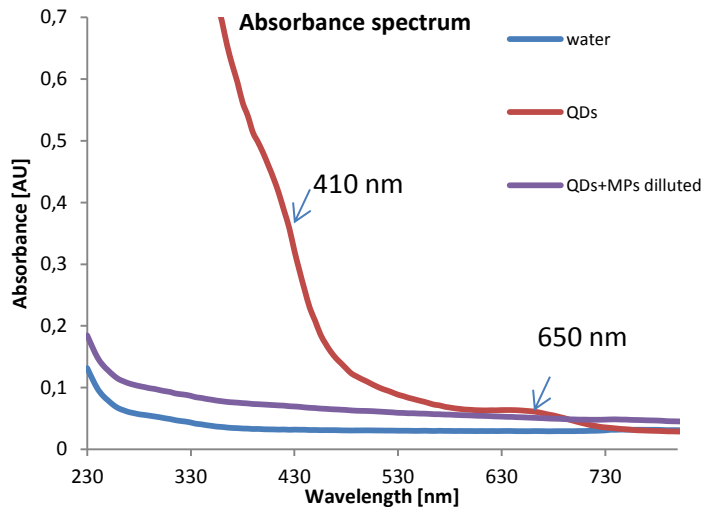
# Iron oxide and quantum dot interaction



# Fluorescence spectrometry

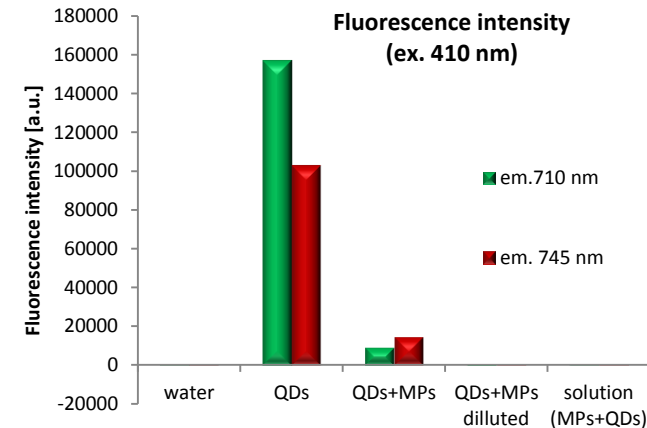
MPs + QDs → magnet → pure solution → fluorimeter

Costar  
Excitate: 410 nm  
100 ul



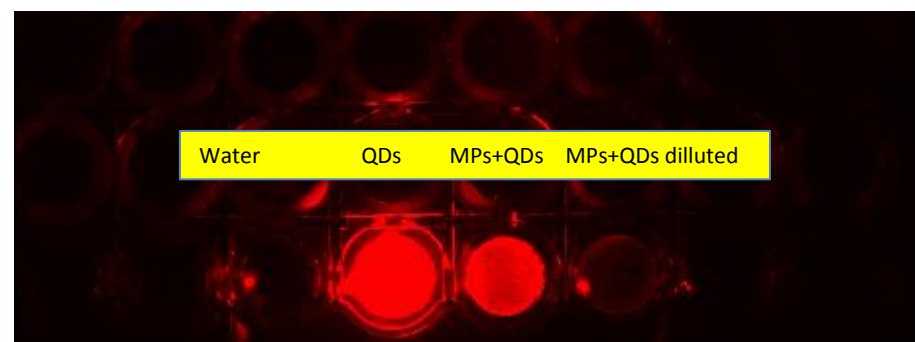
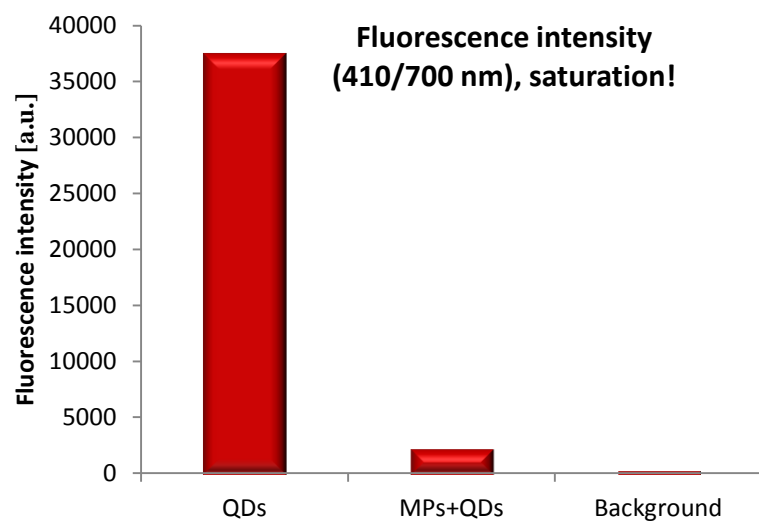
	fl.int [a.u.] Em. 710 nm	fl.int [a.u.] Em. 745 nm
QDs	157096	103135
QDs+MPs	9479	14828

	em. 710 nm	em. 745 nm
water	5	-12
QDs	157096	103135
QDs+MPs	9479	14828
QDs+MPs diluted	616	913
solution (MPs+QDs)	162	206



- IF tečky
- Dochází k posunu maxima QDs vlivem MPs (ze 710 nm na 745 nm).
- Kvantové tečky se váží na MPs
- QDs se z roztoku všechny vyvážaly na MPs – v roztoku nedetekovány.

- Ex. 410 nm/ em. multiple → 410/700 nm, 410/750 nm



# MPS + QDs

- Red QDs
- TxRed – the best
- QDs binded the MPs

**Fluorescenční filtry:**

DAPI (U-MNUA2)	excitace: 360-370 nm emise: 420-460 nm dichroické zrcadlo: 400 nm	
FITC (U-MWIBA3)	excitace: 460-495 nm emise: 510-550 nm dichroické zrcadlo: 505 nm	
TRITC (U-MWG2)	excitace: 510-550 nm emise: 590 nm dichroické zrcadlo: 570 nm	
TxRed (U-MWIY2)	excitace: 545-580 nm emise: 610 nm - IF dichroické zrcadlo: 600 nm	
QD (F37-452/F39-700)	excitace: 430-475 nm emise: 694-707 nm dichroické zrcadlo: 506 nm	



## MPS+dox

Device: *Fluorescence microscopy*

Saved: PC (Mikroskop) – Desktop – Iva – 2013\_2.pol – 2013\_11\_16

Date: 4.12.2013

Sample: in well, on slide, dry

Fluorophore: red QDs

Volume: in microtitration well - 100  $\mu$ l of medium, on slide  
10  $\mu$ l

Zoom: 40x

Ambient light

Fluorescence

Wavelength: TRITC, TxRed, QD cube

Exp.t.: 395 and others ms

ISO 200 (others), SFL, lampa: max

Resolution: 1600x 1200

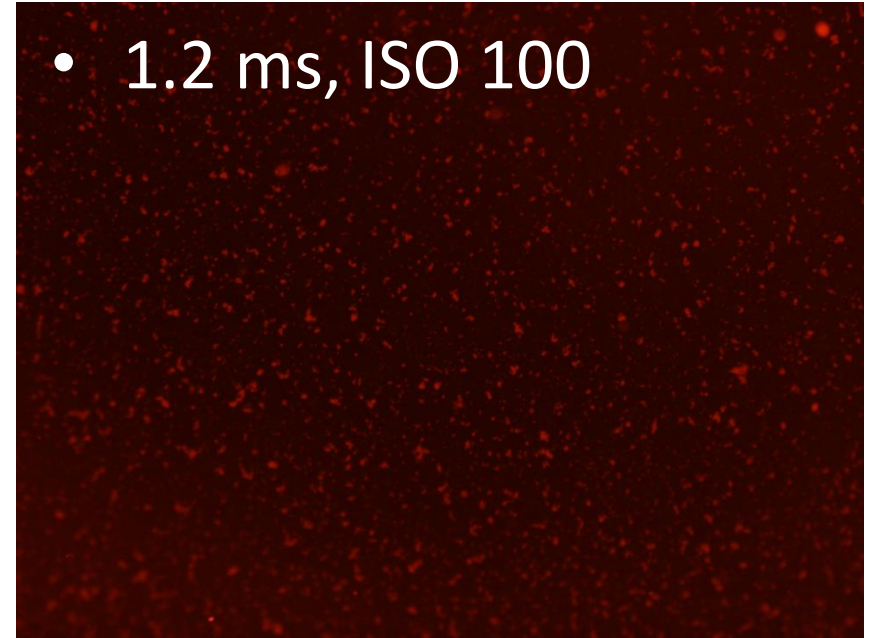
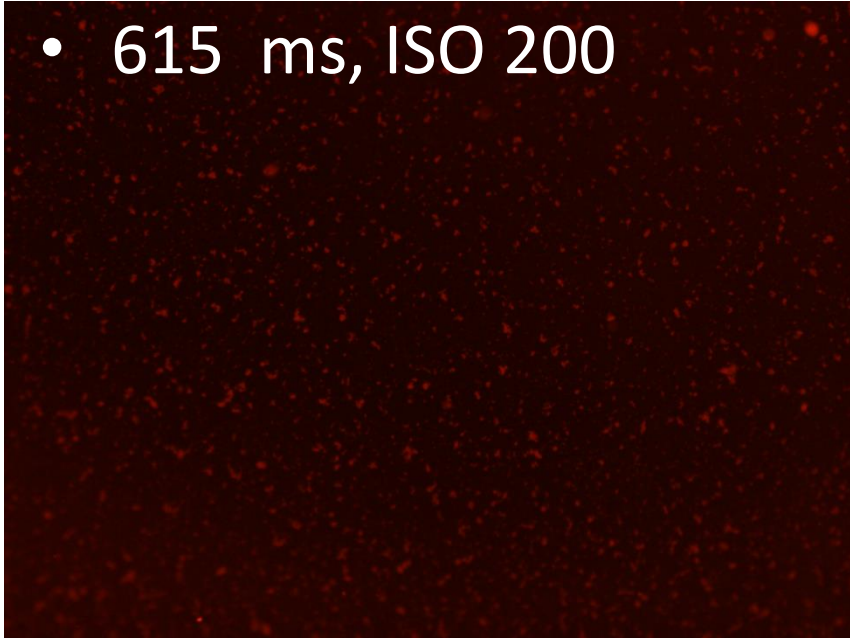
Zoom: 40x  
100ul in Costar

QDs+MPs (diluted)



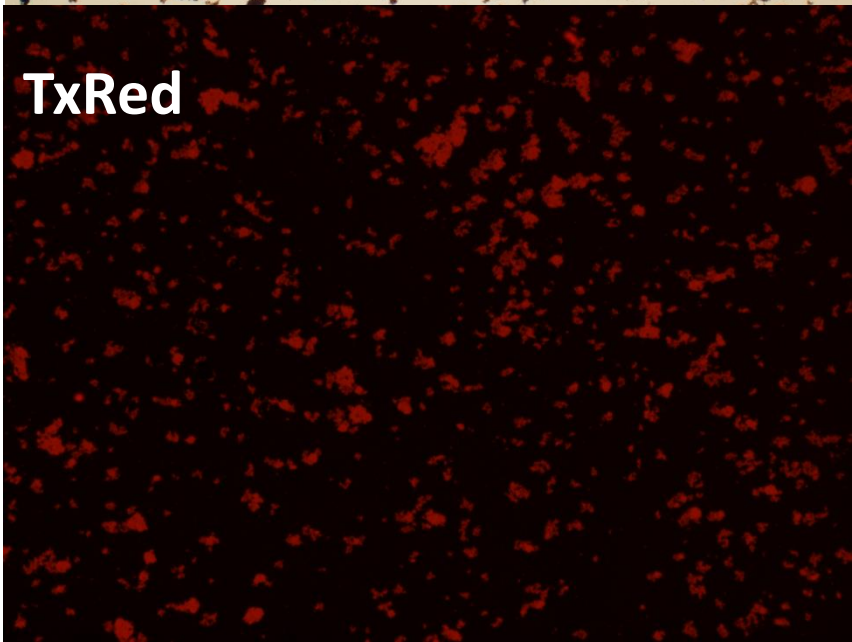
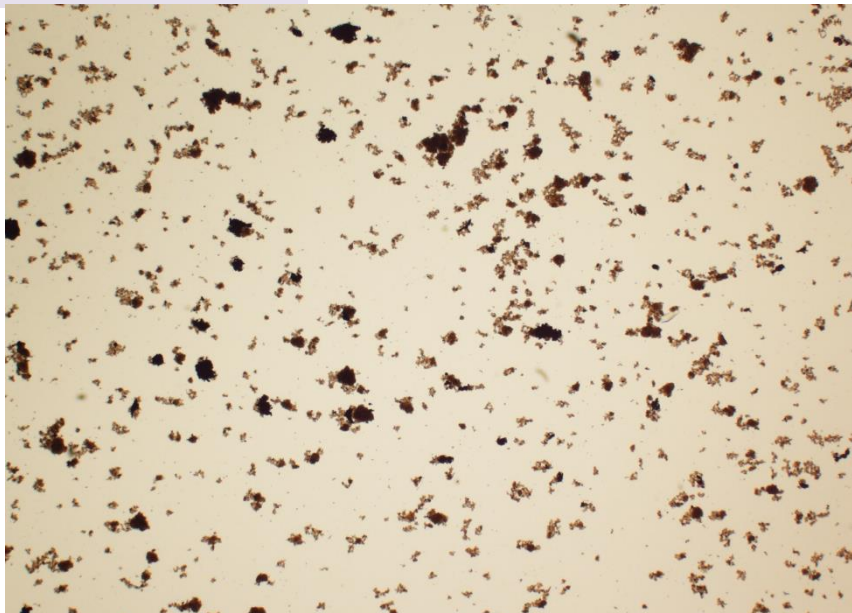
- 615 ms, ISO 200

- 1.2 ms, ISO 100

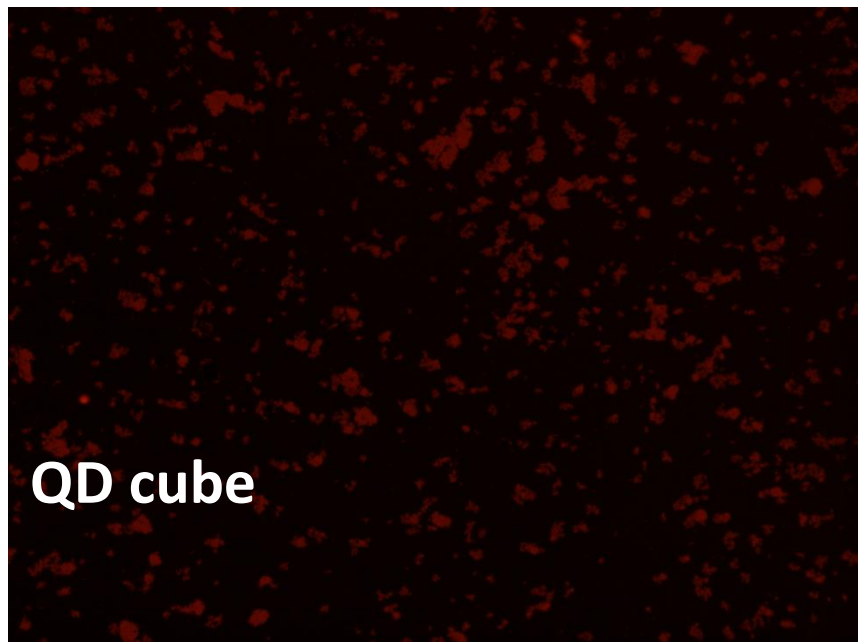


On the slide  
40x  
ISO 200, 395 ms

# QDs+MPs (concentrated)



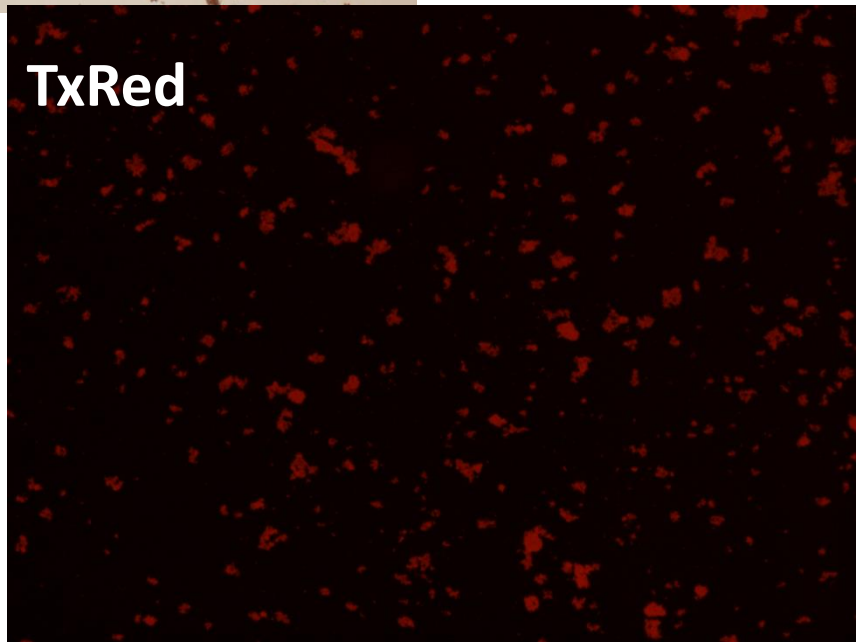
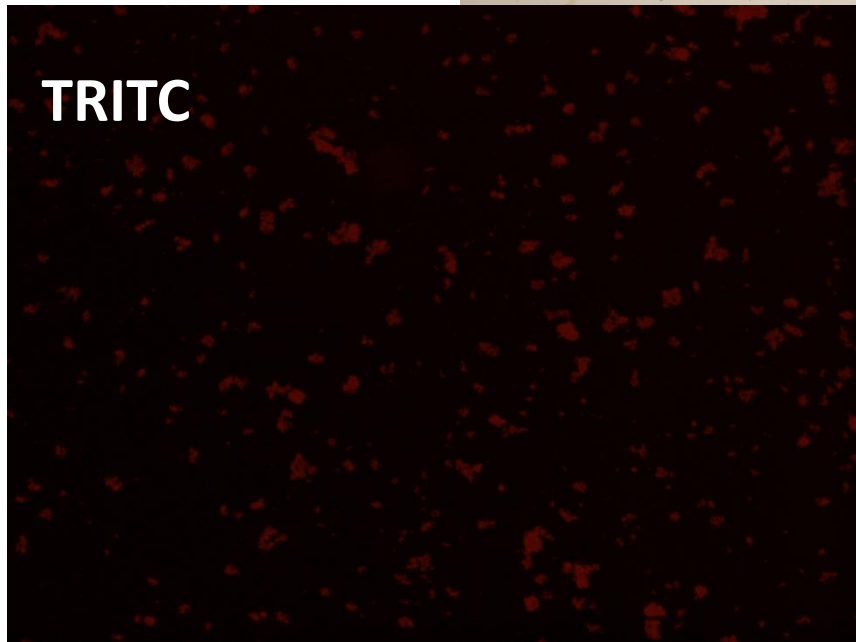
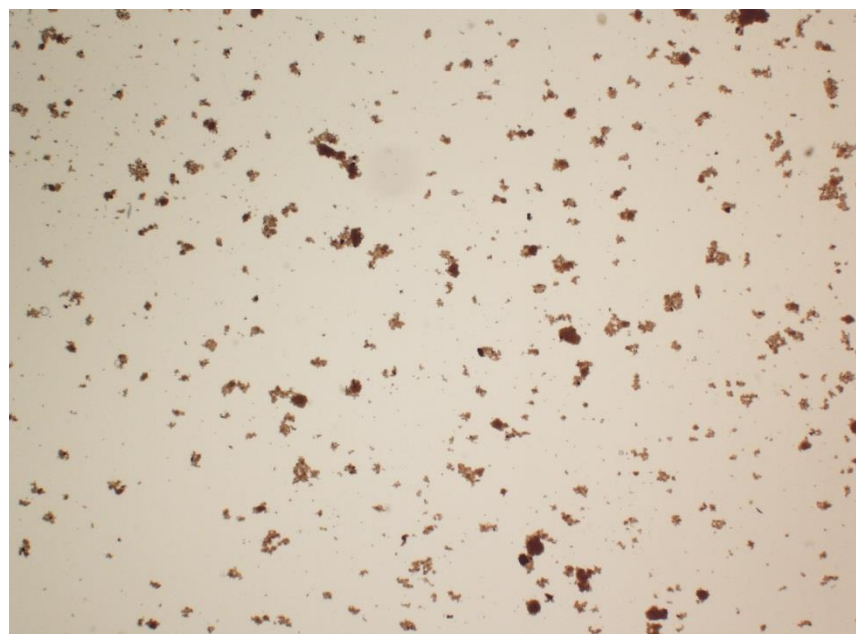
**TxRed**



**QD cube**

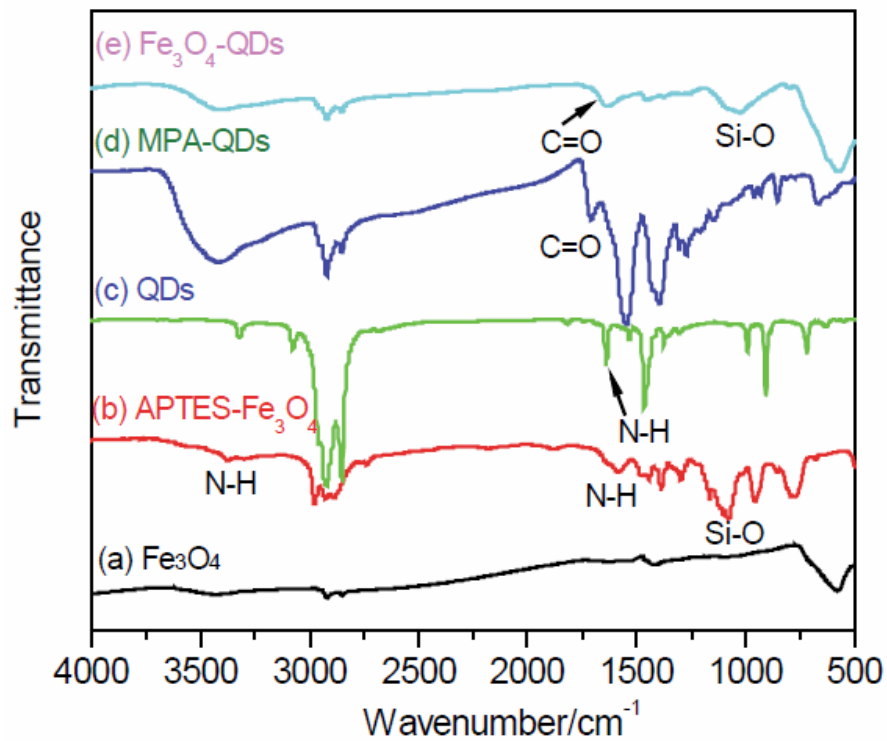
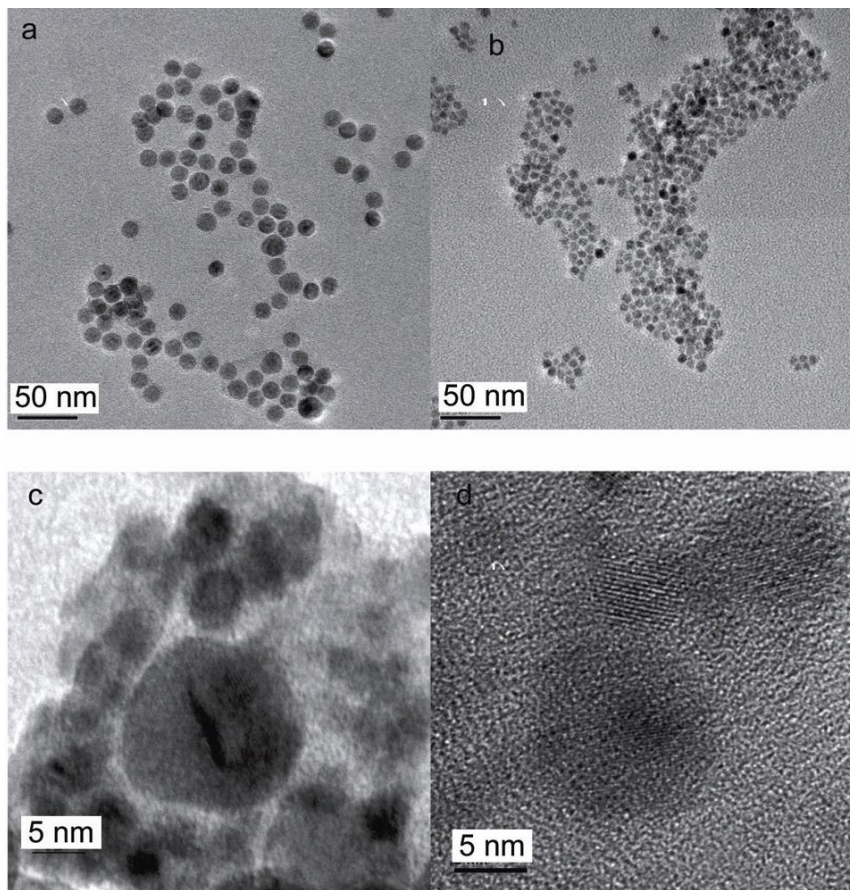
On the slide  
40x  
ISO 200, 395 ms

# QDs+MPs (concentrated)

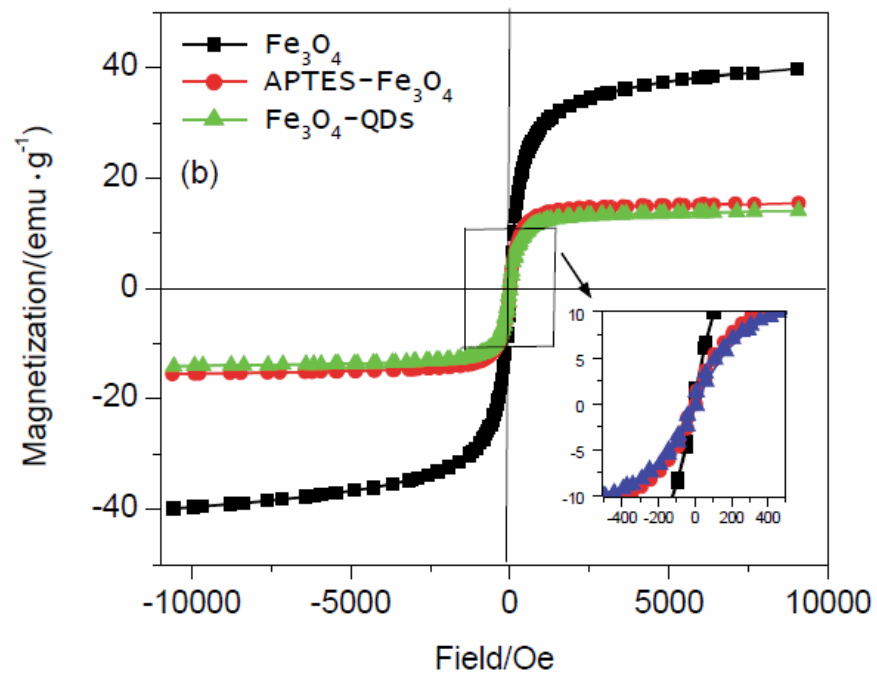
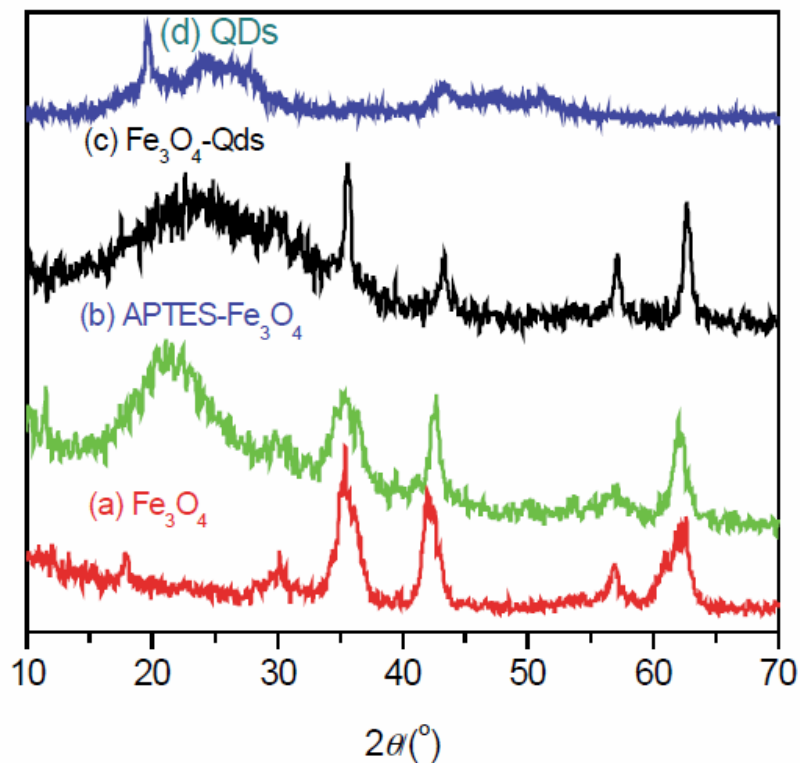




# Preparation and Properties of Magnetic Fluorescent Nanomaterials

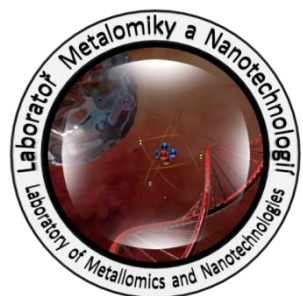


# Preparation and Properties of Magnetic Fluorescent Nanomaterials



# Acknowledgements

All the members of Laboratory of Metalomics and Nanotechnology



NANOBIOMETALNET CZ.1.07/2.4.00/31.0023

# Děkuji Vám za pozornost

Reg.č.projektu: CZ.1.07/2.4.00/31.0023

Název projektu: Partnerská síť centra excelentního bionanotechnologického výzkumu