

Miniaturized systems for bioanalysis

Preparation of fluorescently labeled

proteins, peptides, carbohydrates, ...

Structured magnetic nanoparticles

Quantum dots

Immobilized enzymatic reactors

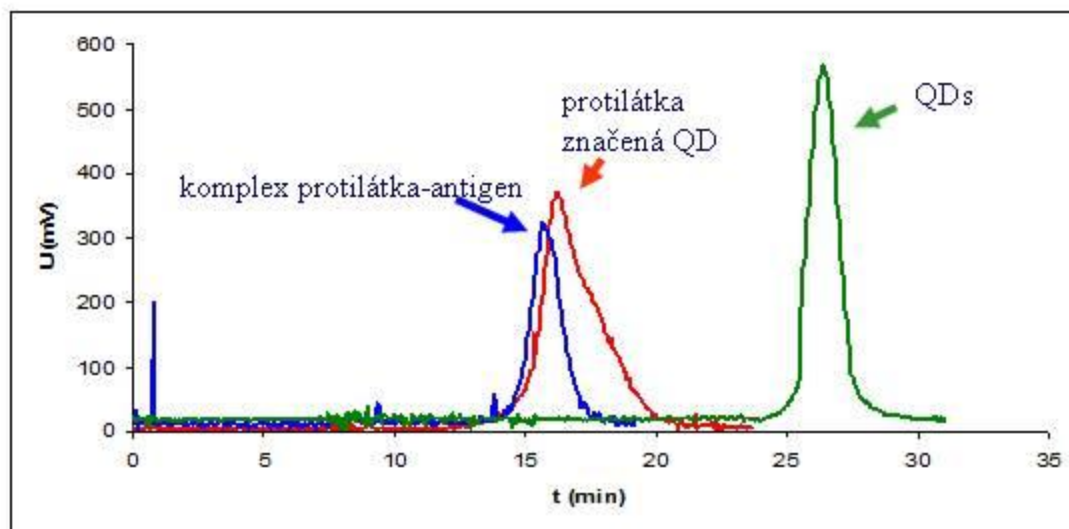
Microfabrication - microfluidics

Electrospray interfacing

Laser based detection - fluorescence, SERS, ...



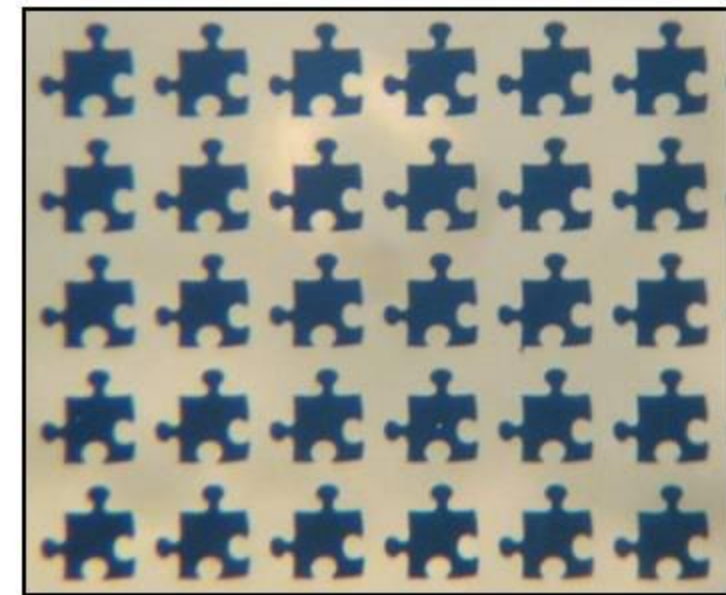
Příprava fluorescenčních kvantových teček a jejich konjugátů s biomolekulami



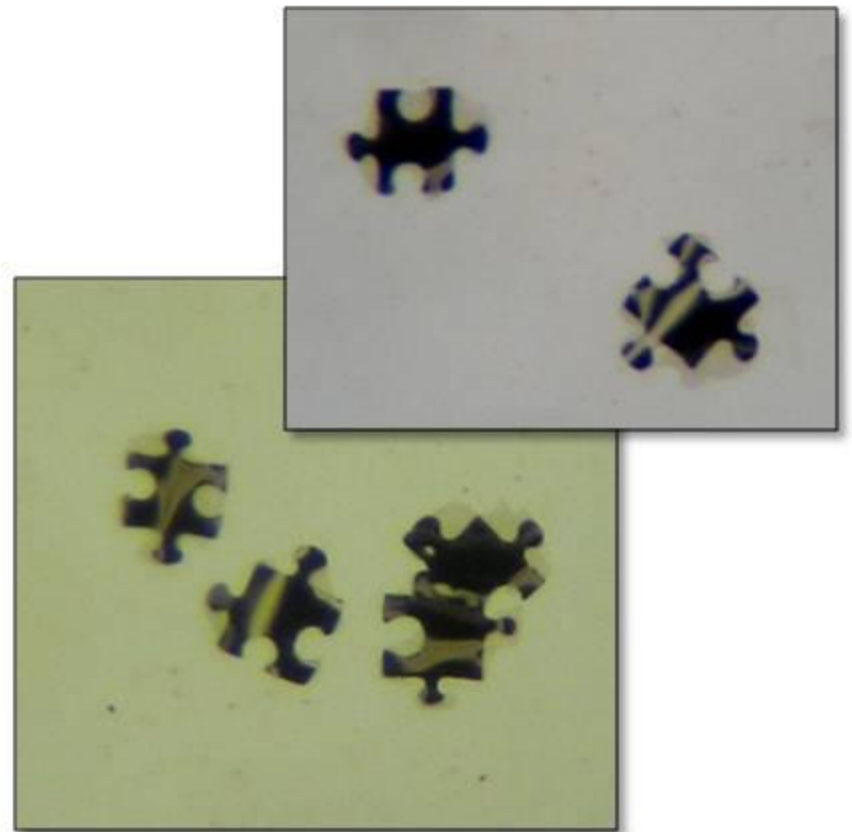
Příprava CdTe kvantových teček o různé velikosti částic

Konjugace kvantových teček s biomolekulami

Analýza konjugátů kapilární elektroforézou



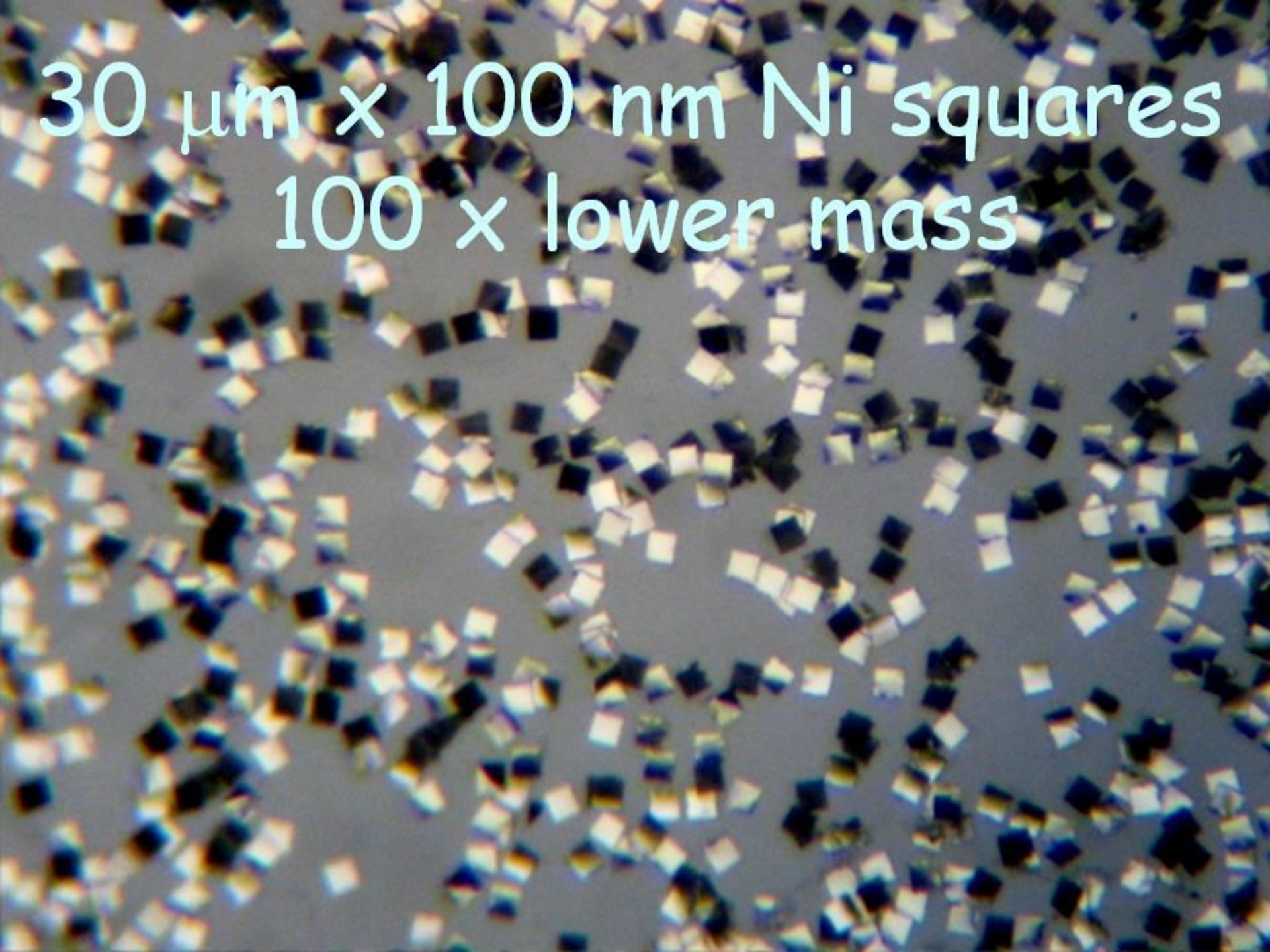
Released particles



200 μm

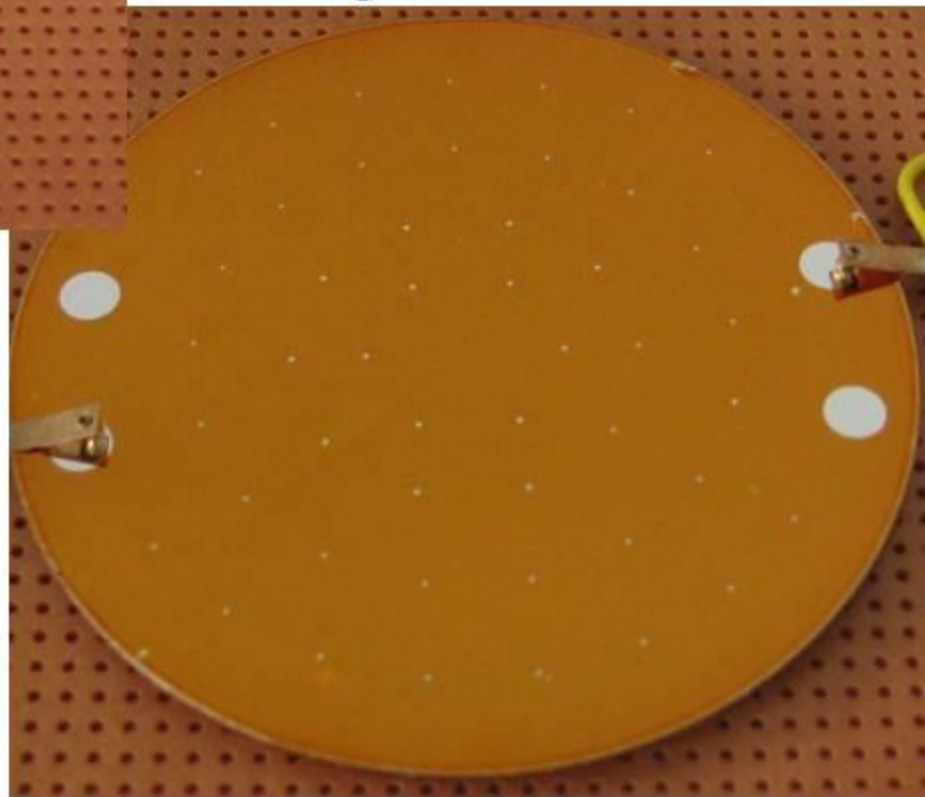
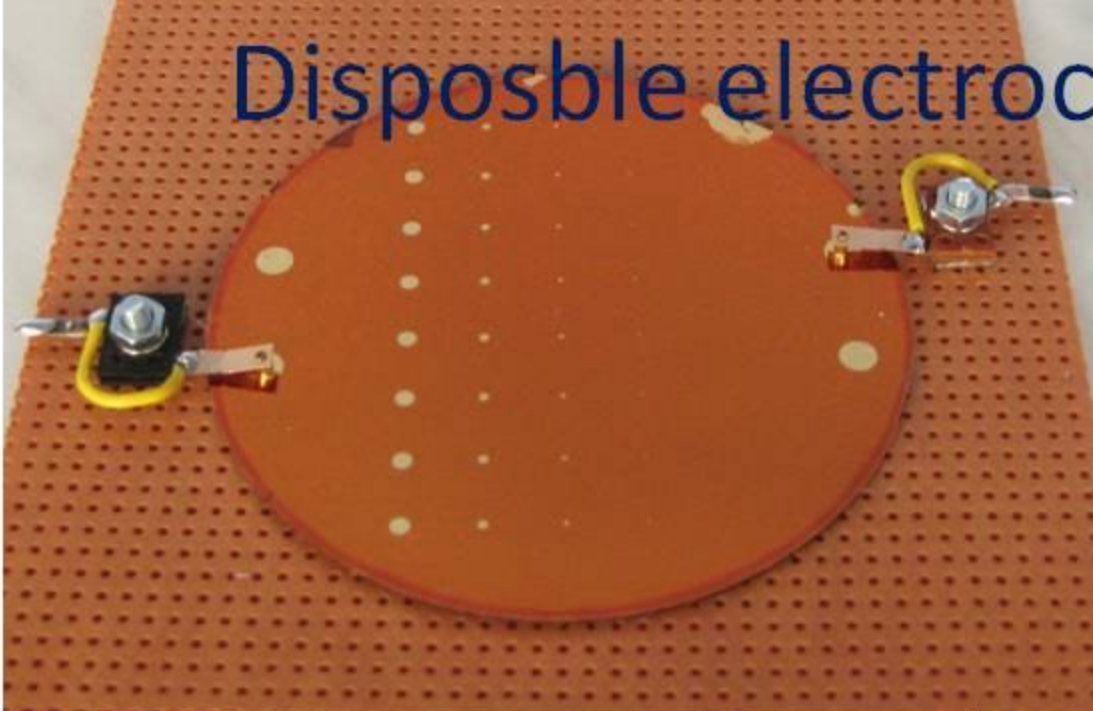
Before and after etching

30 μm \times 100 nm Ni squares
100 \times lower mass

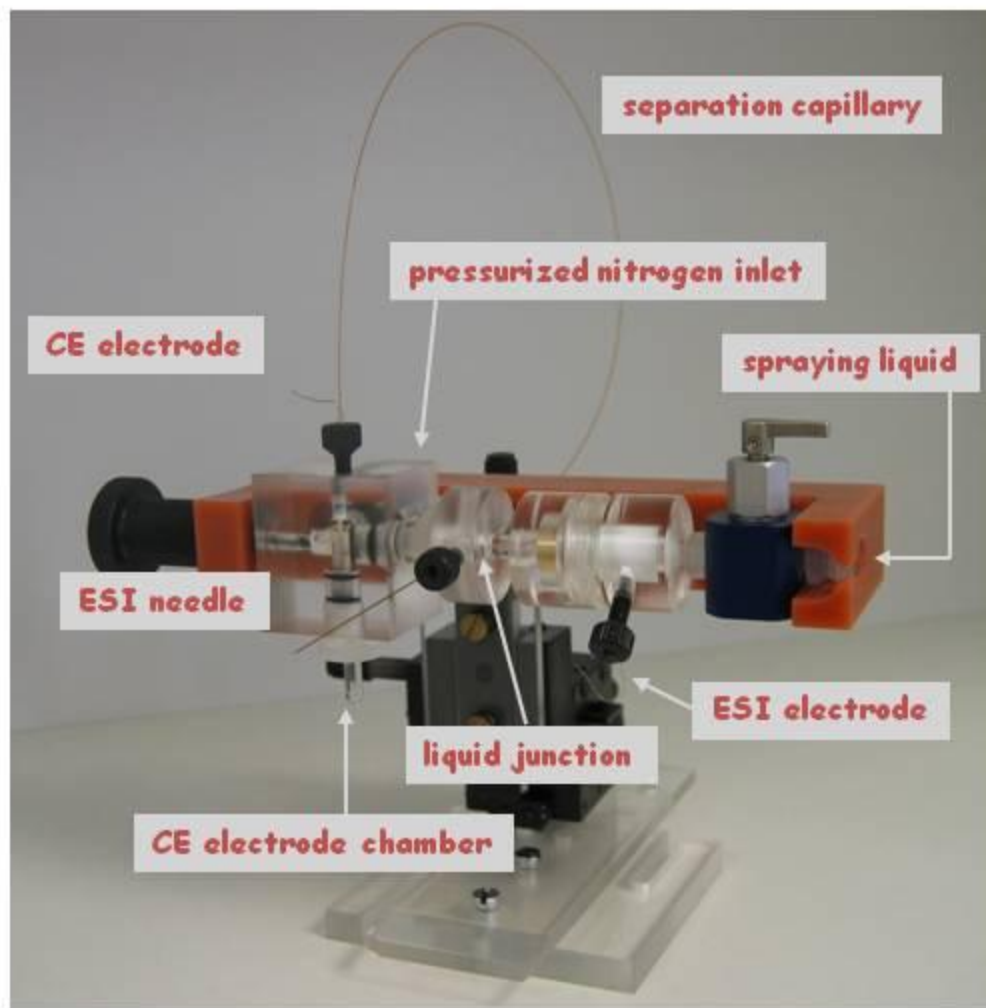
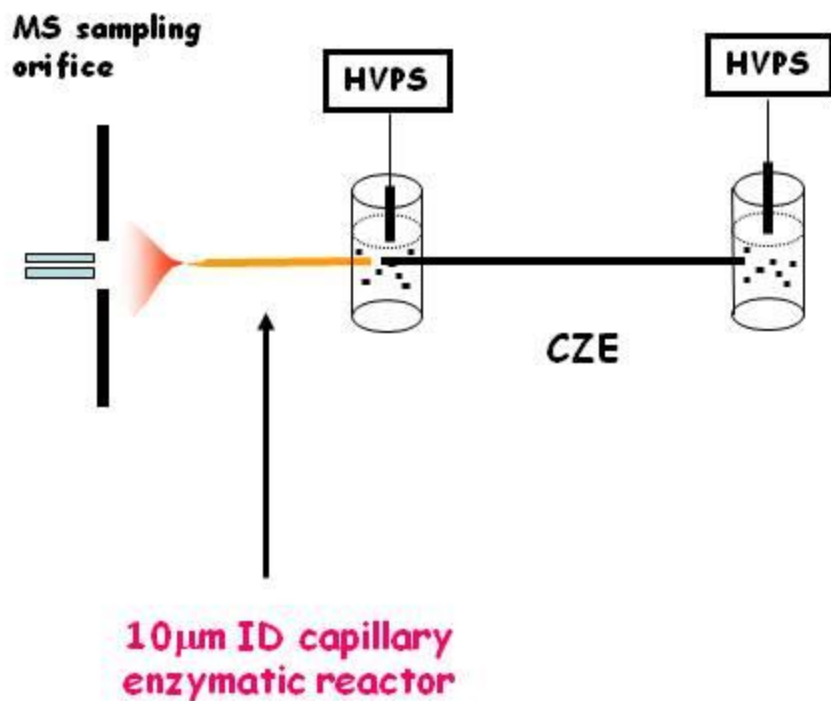


Disposible electrochemical sensors

prepared by:
sputtering
electroplating
amalgamation

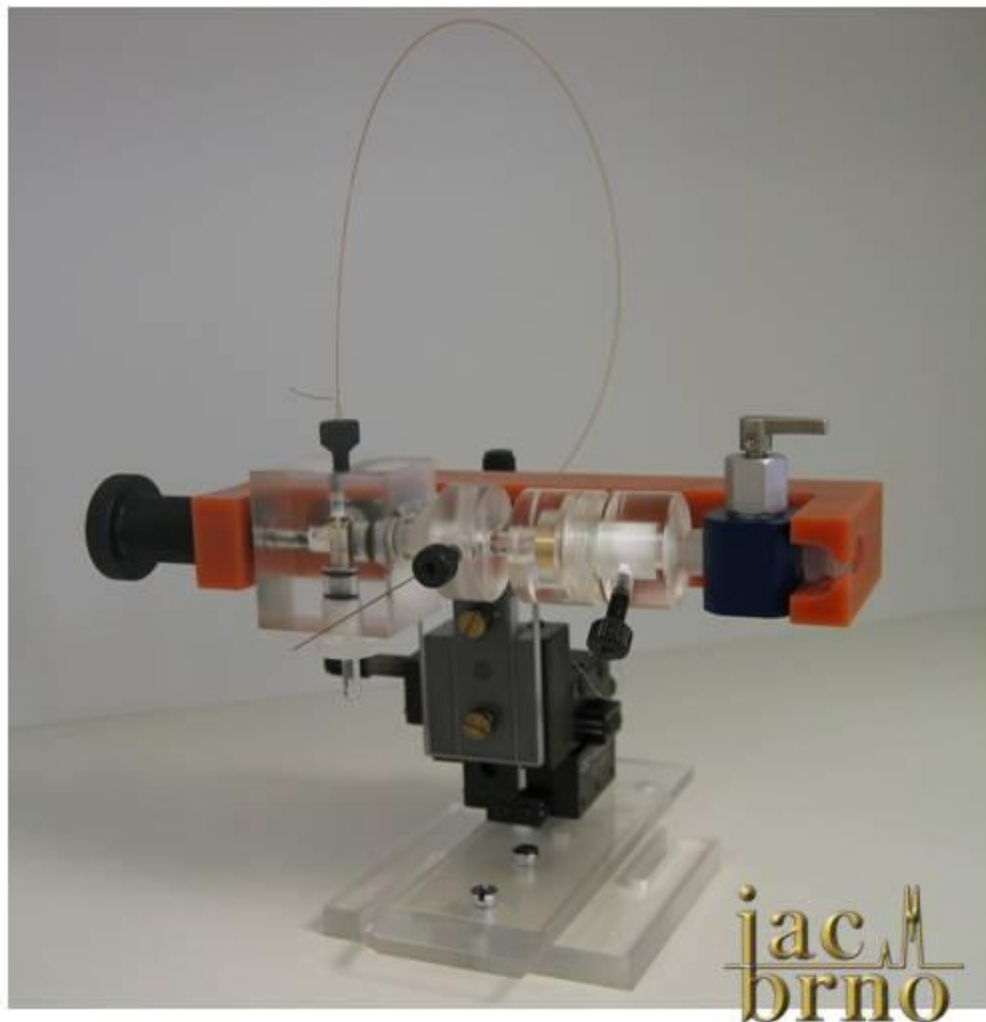
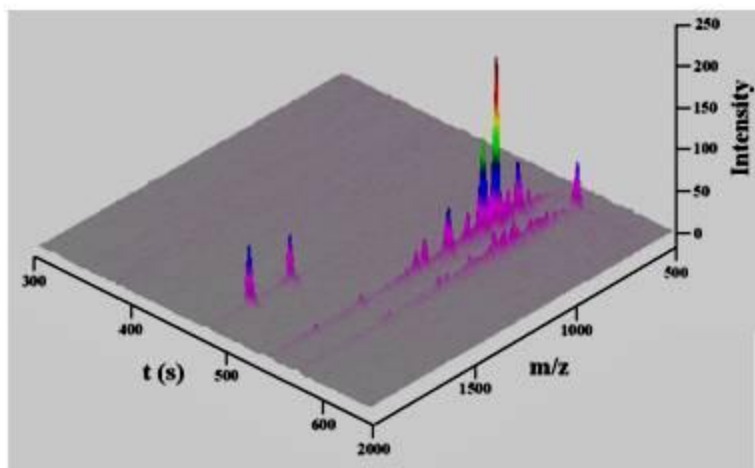


On-line Coupling with Separations

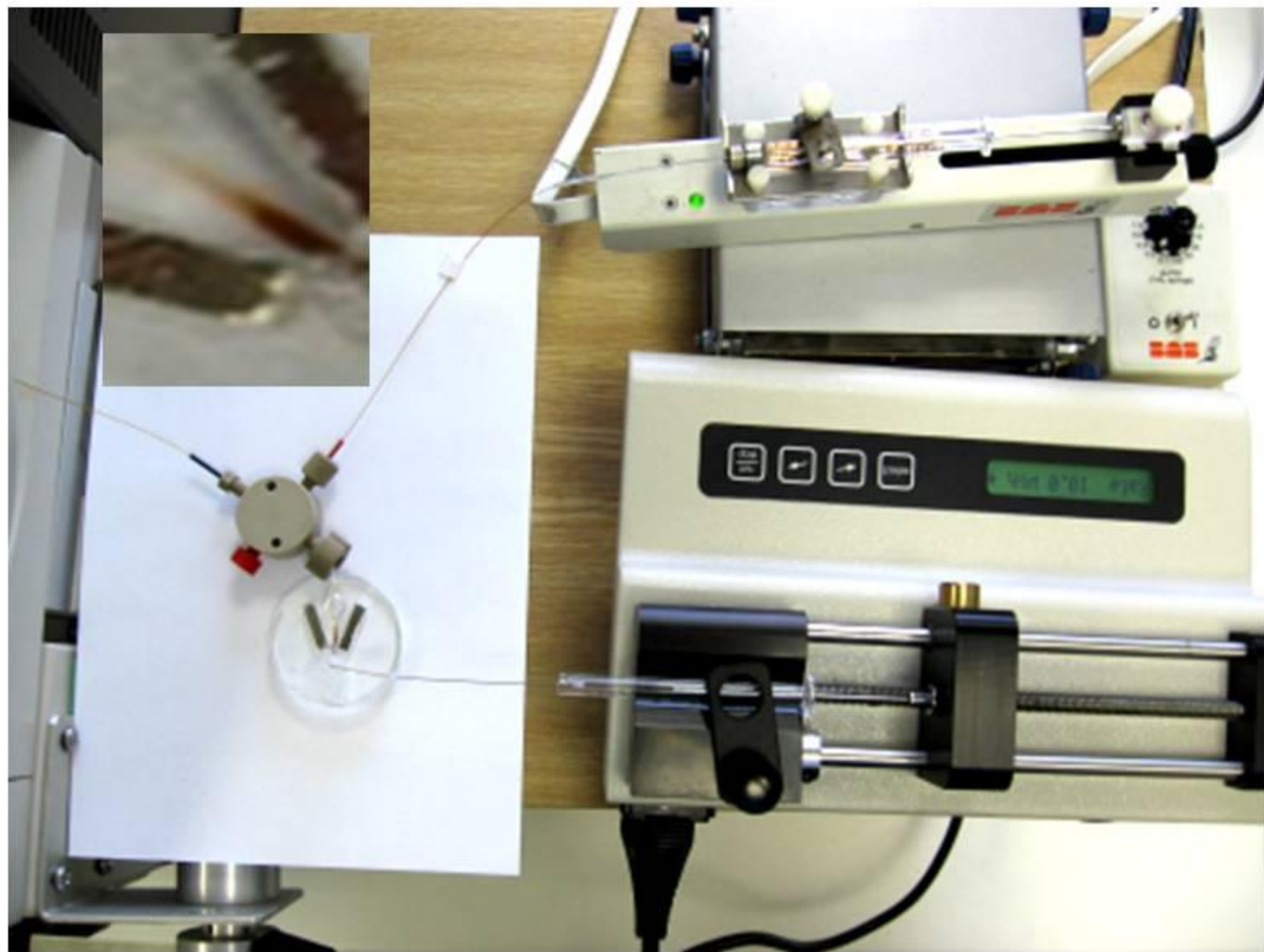


Integrovaný systém pro CE separaci, enzymatické štěpení a ESI-MS

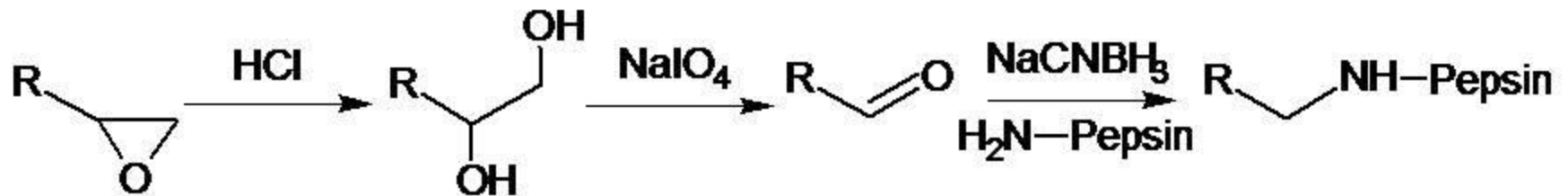
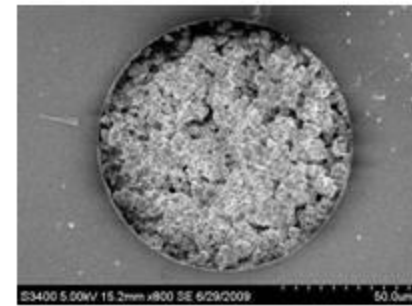
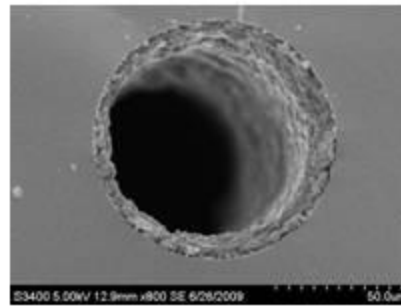
On-line spojení separace
kapilární zónovou
elektroforézou,
enzymatického štěpení a
analýzy hmotnostním
spektrometrem



Enzymatic microreactor with magnetic nanoparticles



Pepsin A immobilization on GMA-EDMA monoliths



1) Hydrolysis of epoxide groups -> 0.5 M HCl for 18 hours

2) Oxidation

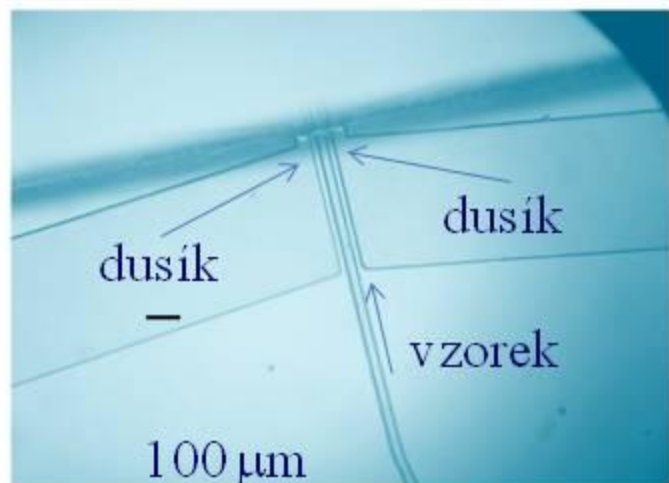
-> 0.1 M NaIO₄ for 1 hour

3) Pepsin immobilization
(3mg/ml)
(pH 4.5)

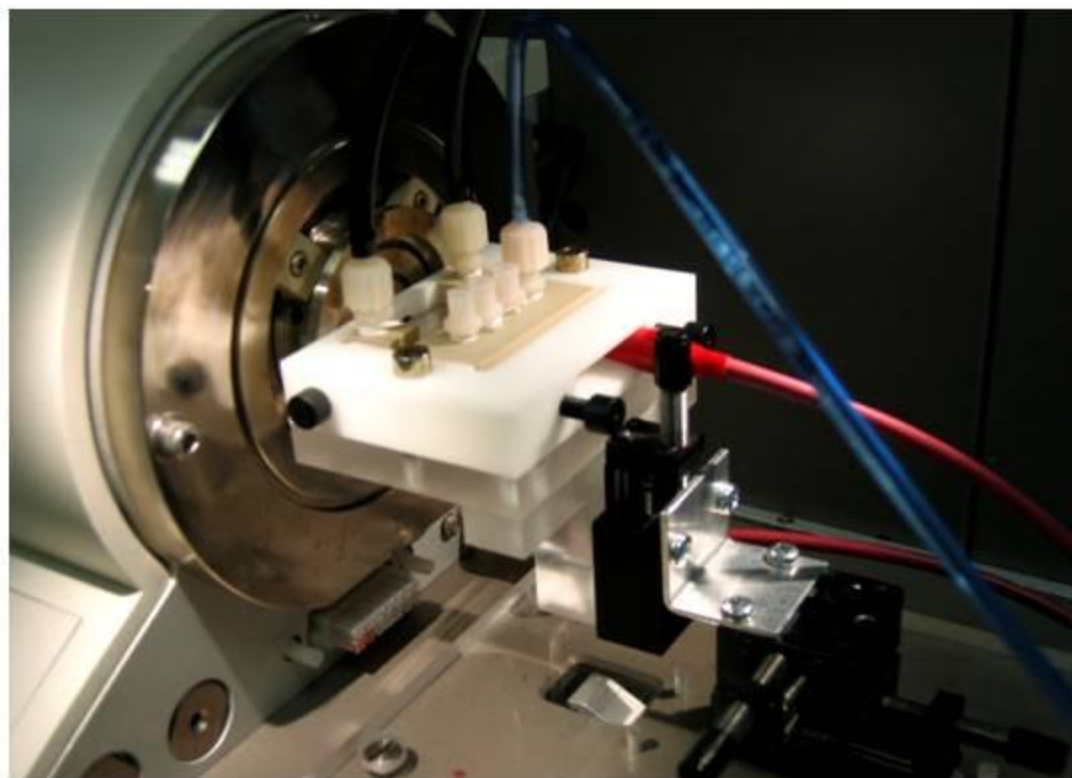
-> Pepsin A (1mg/ml) + NaCNBH₃
in 50 mM acetate buffer

flow rate 30 nl/min for 4 hours

Mikrofluidický nebulizátor pro ESI ionizaci

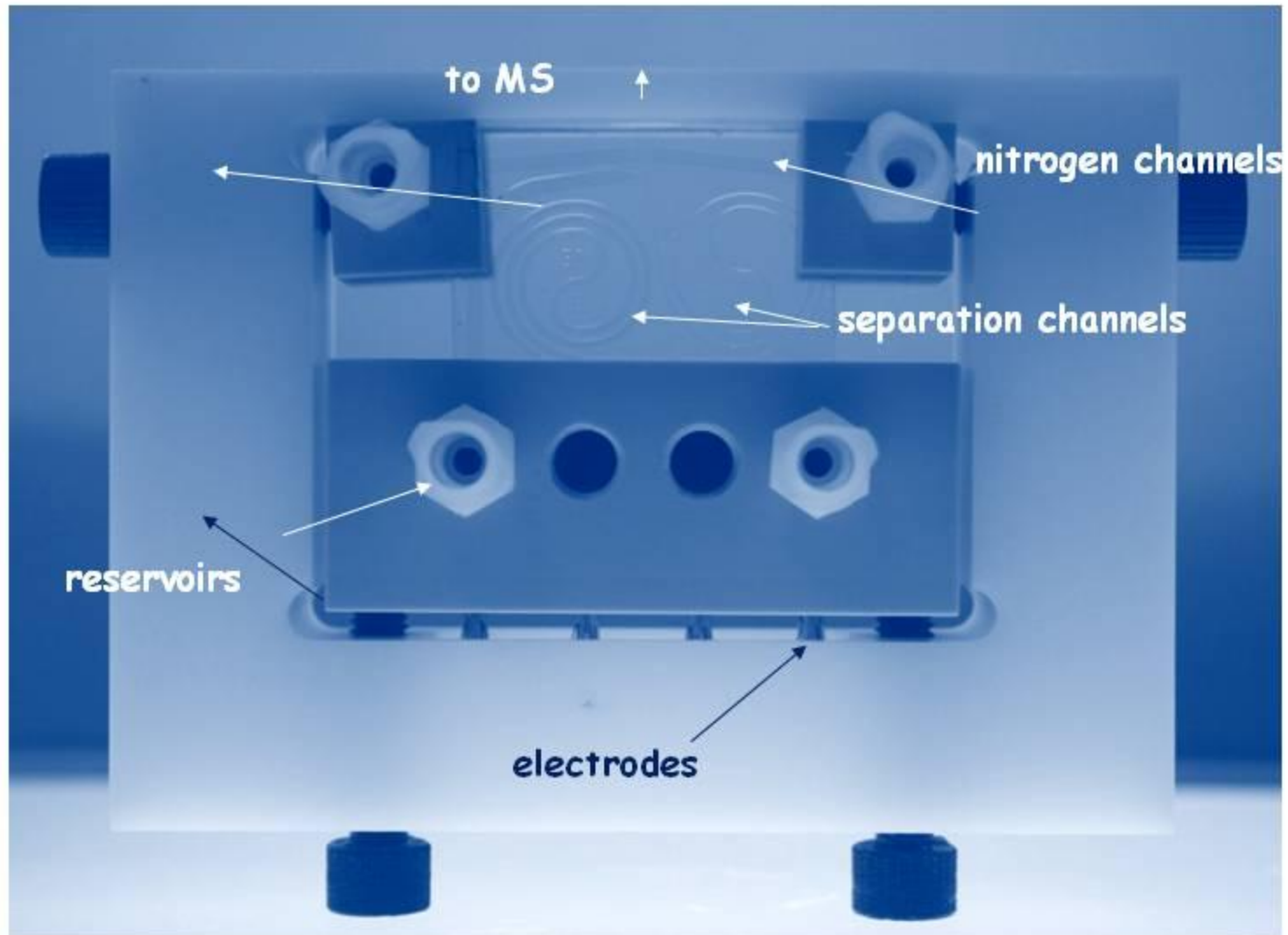


Příprava mikrostruktur
ve skleněných
a plastových substrátech



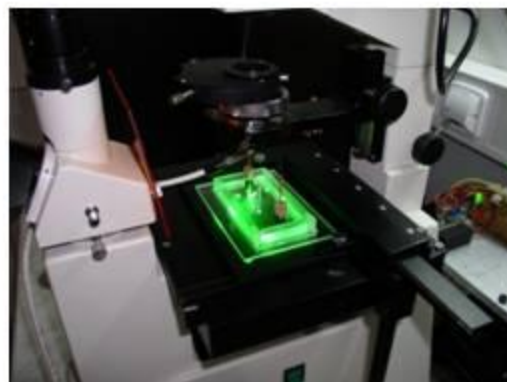
Návrh a příprava elektrosprejového rozhraní

Pneumatic nebulizer



Zobrazování, manipulace a analýza jednotlivých buněk

Příprava mikrofluidického zařízení z PDMS pro elektroforetickou separaci



Specifické (pomocí protilátek) a nespecifické fluorescenční značení buněk, zejména kvasinek a lymfocytů

