

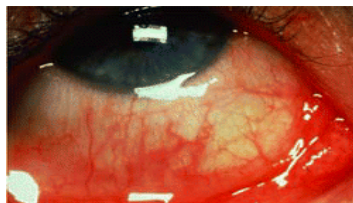
Název: FLOW INJECTION ANALYSIS WITH ELECTROCHEMICAL DETECTION FOR
RAPID IDENTIFICATION OF PLATINUM-BASED CYTOSTATICS AND
PLATINUM CHLORIDES IN WATER

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Datum: 19.9.2014

Platinum

- biologically inert
- naturally in environment in very low amounts
- well suited for large number of various applications, transportation, healthcare, chemistry, jewellery and a plenty of other areas
- bioactive soluble compounds – mainly chloride salts cause hypersensitivity, conjunctivitis leading to photophobia, rhinitis, nasopharynx, breathing difficulties

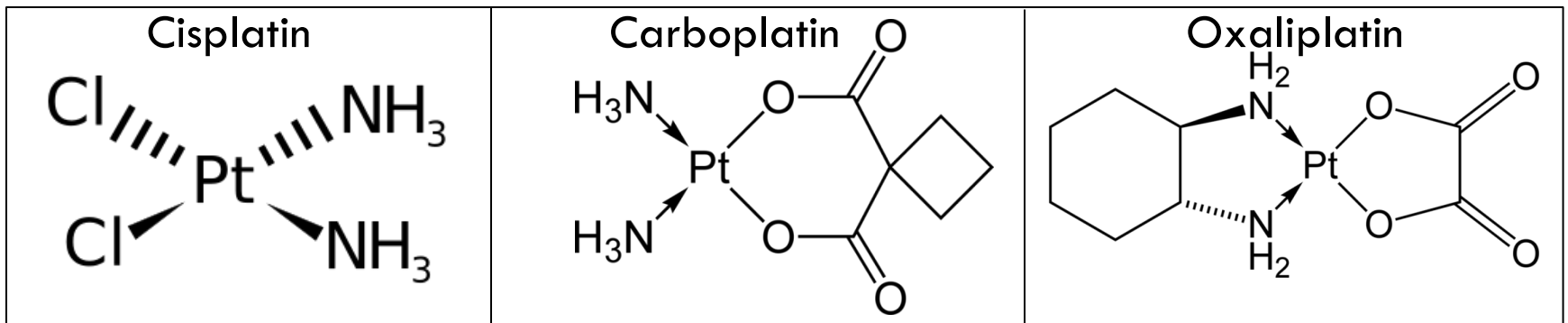


Platinum-induced conjunctivitis



Platinum-based cytostatic drugs

- coordination complexes of platinum
- dose-limiting side effect in form of peripheral neurotoxicity and nephrotoxicity
- the most widely used – cisplatin, carboplatin, oxaliplatin
- medical facilities represent a significant source of environmental contamination

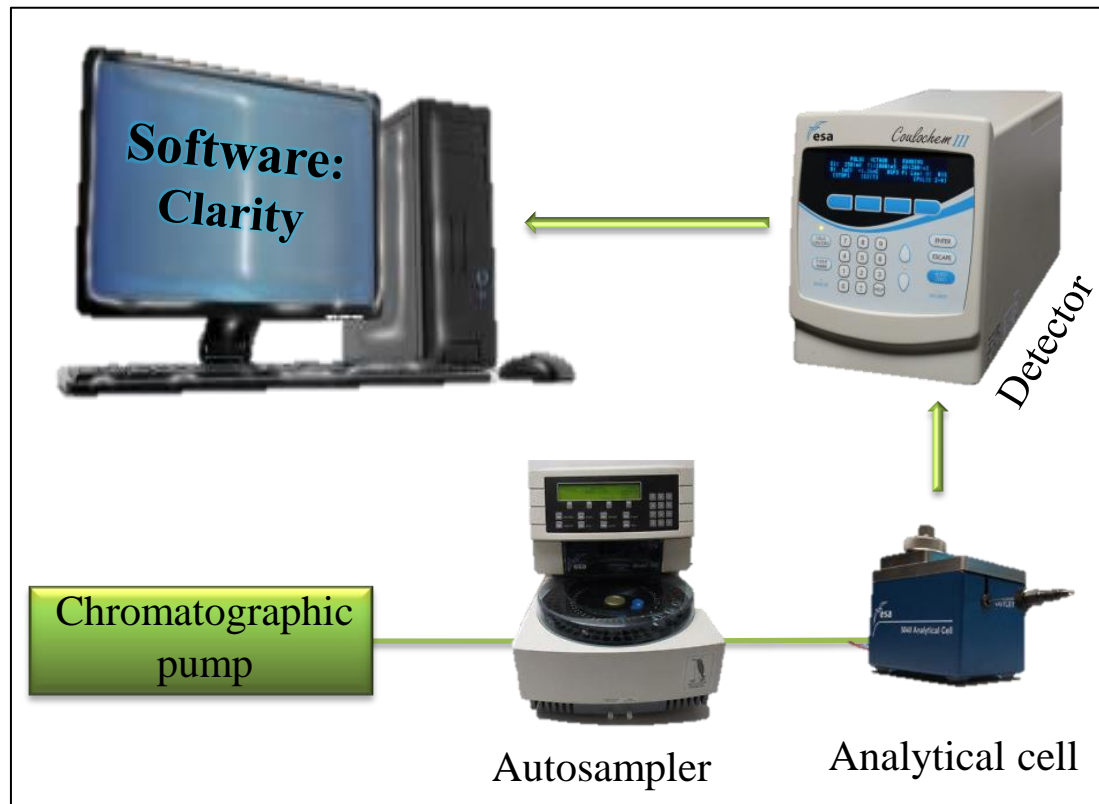


Aims of our study

- Development of method for discrimination of platinum-based cytostatic and platinum chlorides in liquid samples

Flow Injection Analysis with electrochemical detection

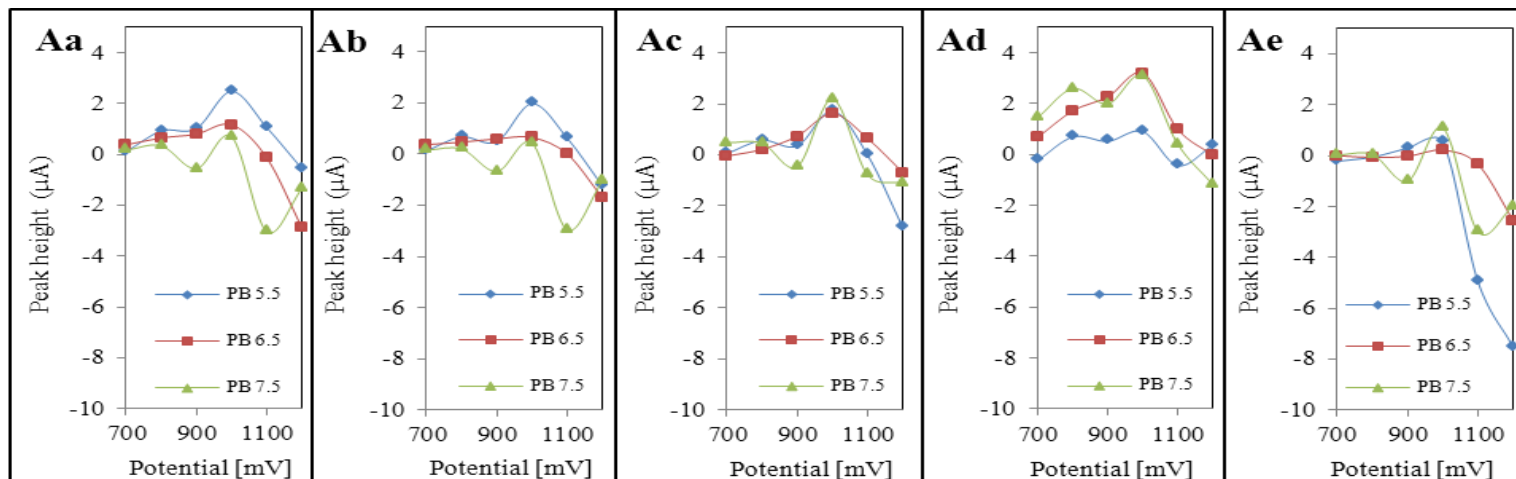
FIA-ED



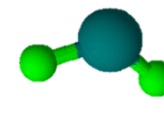
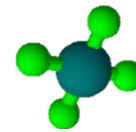
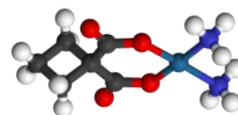
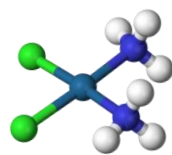
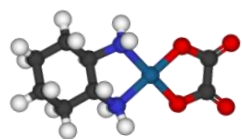
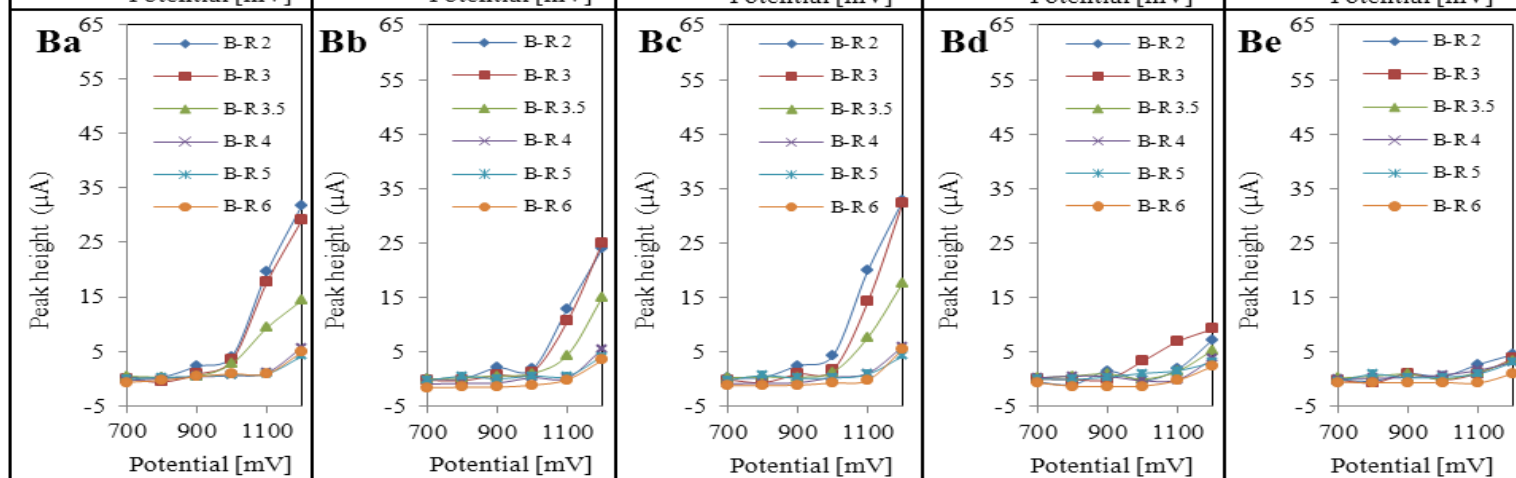
glassy carbon electrode as a working electrode, a hydrogen-palladium electrode as a reference electrode and an auxiliary electrode

Results

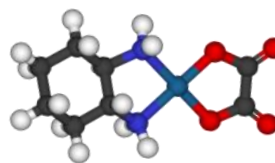
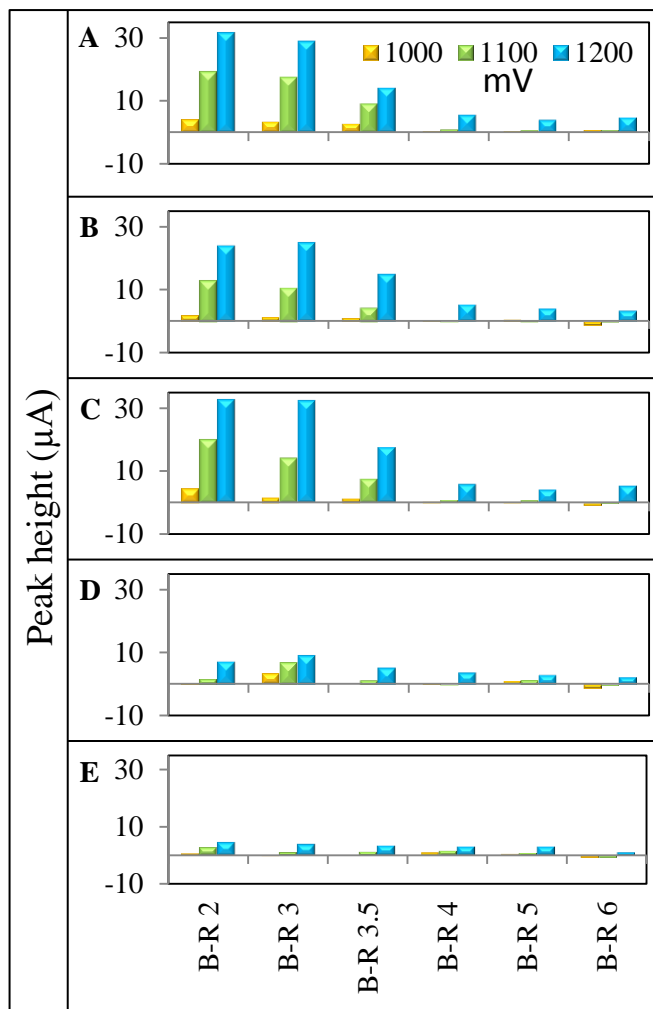
Phosphate buffer



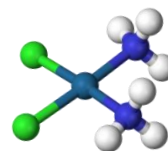
Britton-Robinson buffer



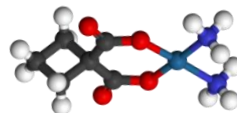
Results



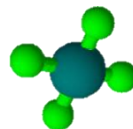
Oxaliplatin



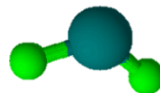
Cisplatin



Carboplatin

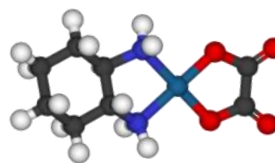
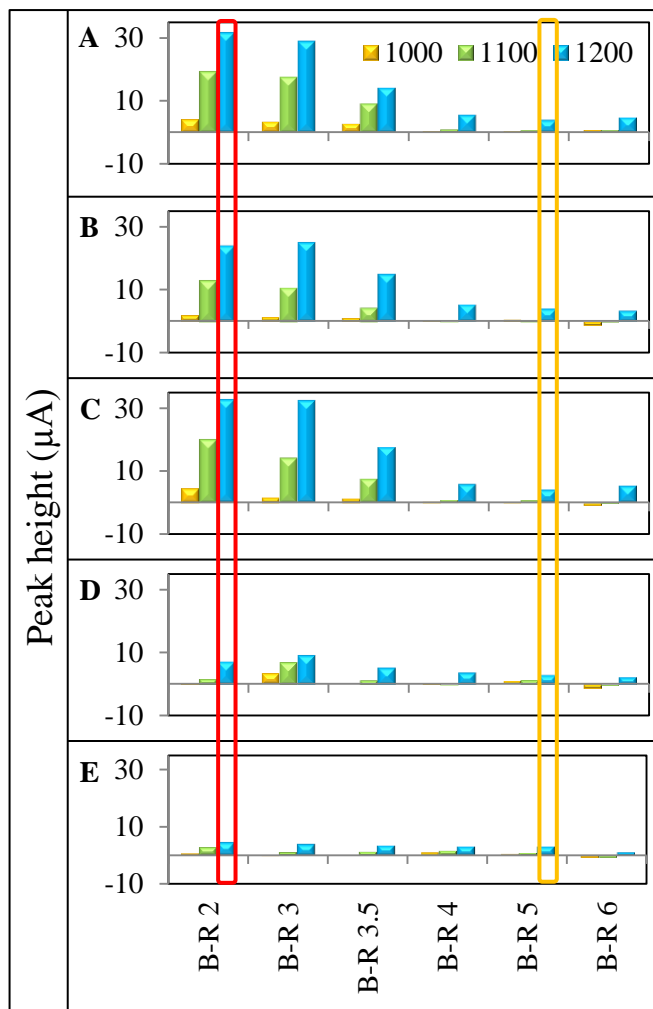


PtCl₄

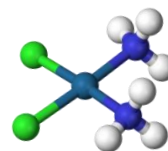


PtCl₂

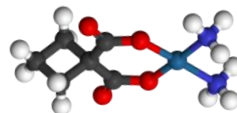
Results



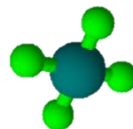
Oxaliplatin



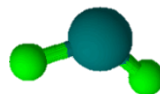
Cisplatin



Carboplatin

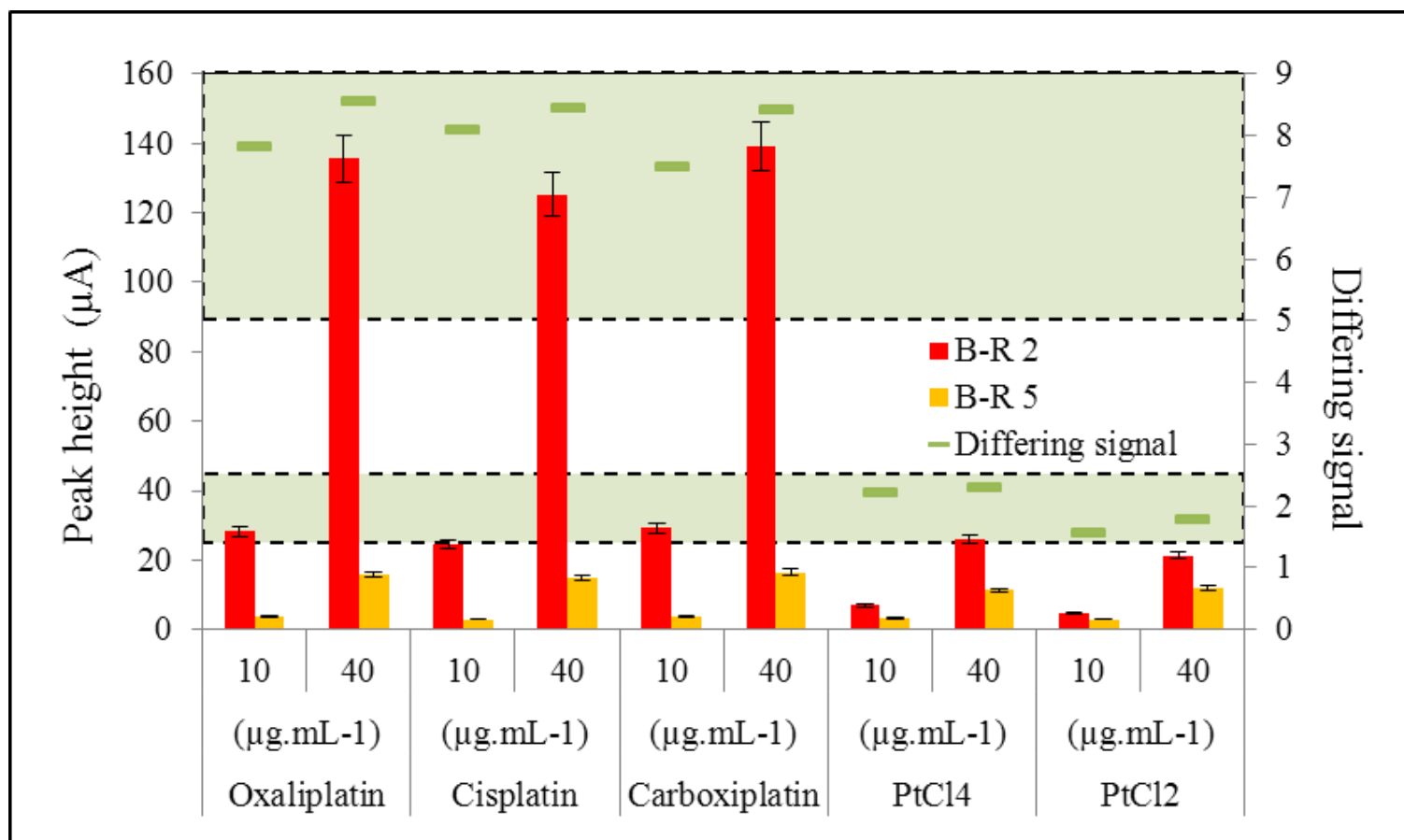


PtCl_4



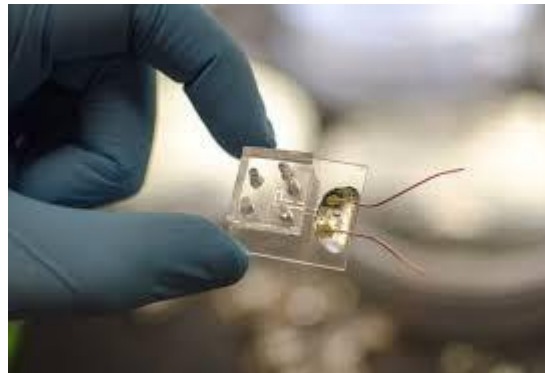
PtCl_2

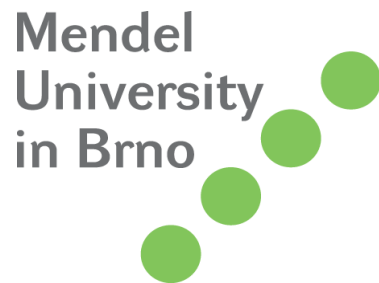
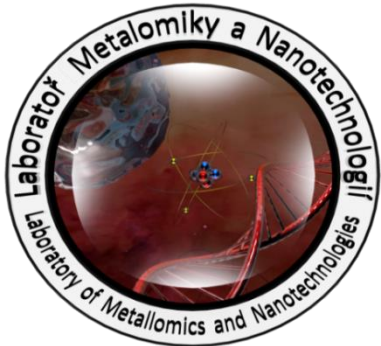
Results



Conclusion

- We developed a method for discrimination of platinum-based cytostatic and platinum chlorides
- Rapid and inexpensive method with the potential to be miniaturized
- This method could be applicable for hospital wastewater evaluation or for rapid, screening analyses





Thank you for your attention!



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OP Vzdělávání
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INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ