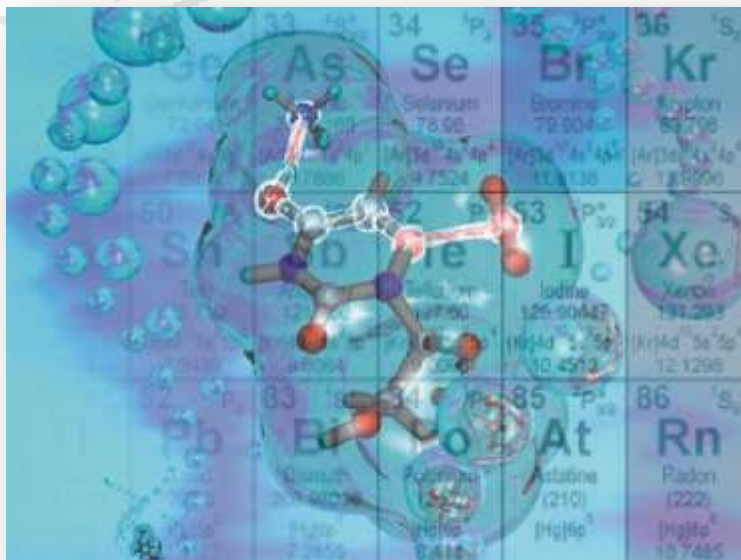


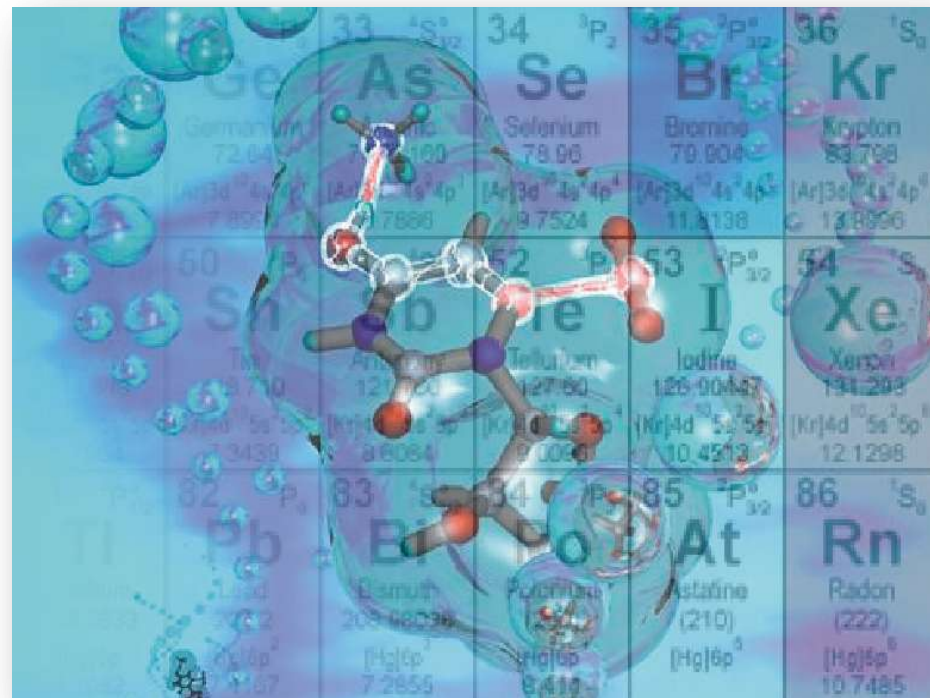
Associate professor, PhD,
OSTVALD ROMAN

BASICS OF ANALYTICAL CHEMISTRY



Introduction, analytical
chemistry techniques
classification

Tomsk Polytechnic University



INTRODUCTION

TIME DISTRIBUTION

Laboratory - 2 hours

Seminars - 8 hours

Consultations - 2 hours

Total classes - 12 hours

Students self study - 10 hours

Final presentation 9 semester

SEMINARS PLAN

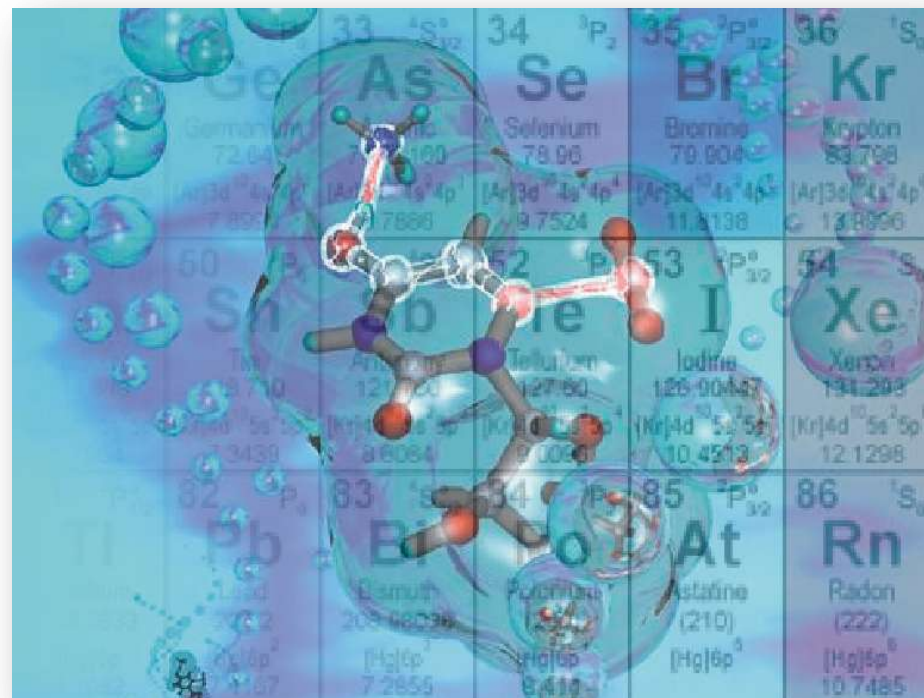
- ✓ Introduction into analytical chemistry, analytical chemistry techniques classification;
- ✓ Introduction into electroanalytical chemistry, galvanic cells;
- ✓ Introduction into electroanalytical chemistry, electrolysis cells;
- ✓ Potentiometry

TASK FOR FINAL PRESENTATION

Presentation about one of the methods of analytical chemistry

- ✓ **Title;**
- ✓ **Content, introduction;**
- ✓ **Analytical technique description;**
- ✓ **Exemple of analysis (scheme, photos, graphs);**
- ✓ **Conclusion**

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SUBJECT OF ANALYTICAL CHEMISTRY

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SUBJECT OF ANALYTICAL CHEMISTRY

موضوع کیمیاء تحلیلی
Oral Practice
موضوع کیمیاء تحلیلی

- ✓ *What is the subject of analytical chemistry?*
- ✓ *What do you know about analytical chemistry?*
- ✓ *What methods of analytical chemistry do you know?*
- ✓ *Did you use some methods of analytical chemistry?*
- ✓ *Are the analytical chemistry and chemical analysis the same?*

SUBJECT OF ANALYTICAL CHEMISTRY



*Read the text on the page 6
and discuss the previous
questions again*

- ✓ *What is the subject of analytical chemistry?*
- ✓ *What do you know about analytical chemistry?*
- ✓ *What methods of analytical chemistry do you know?*
- ✓ *Did you use some methods of analytical chemistry?*
- ✓ *Are the analytical chemistry and chemical analysis the same?*

QUALITATIVE AND QUANTITATIVE ANALYSIS

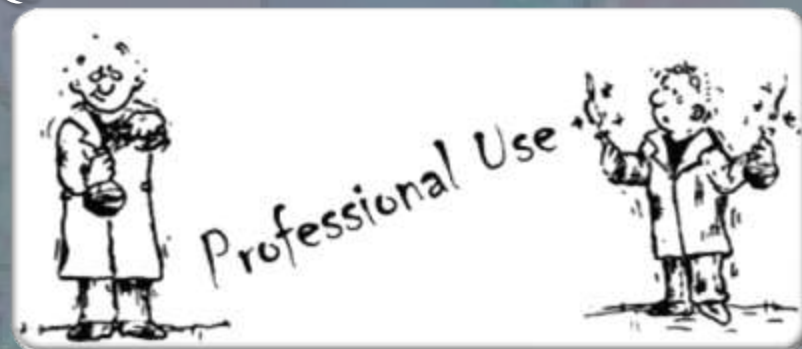
Read the text on the page 7 and find answers to the following questions



- ✓ *What is the difference between qualitative analysis and the quantitative one?*
- ✓ *Which kind of these analyses is more important for people? Give reasons for your opinion.*
- ✓ *Where is the quantitative analysis applied?*

QUALITATIVE AND QUANTITATIVE ANALYSIS

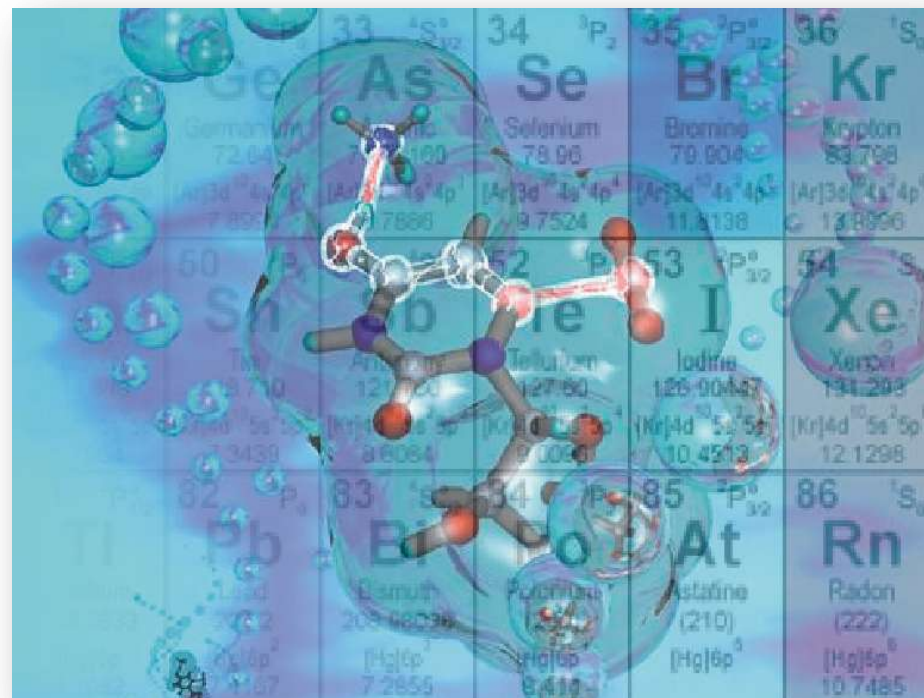
*Study presentations of
James K. Hardy*



*Professor of the
University of Akron,
Ohio, USA*

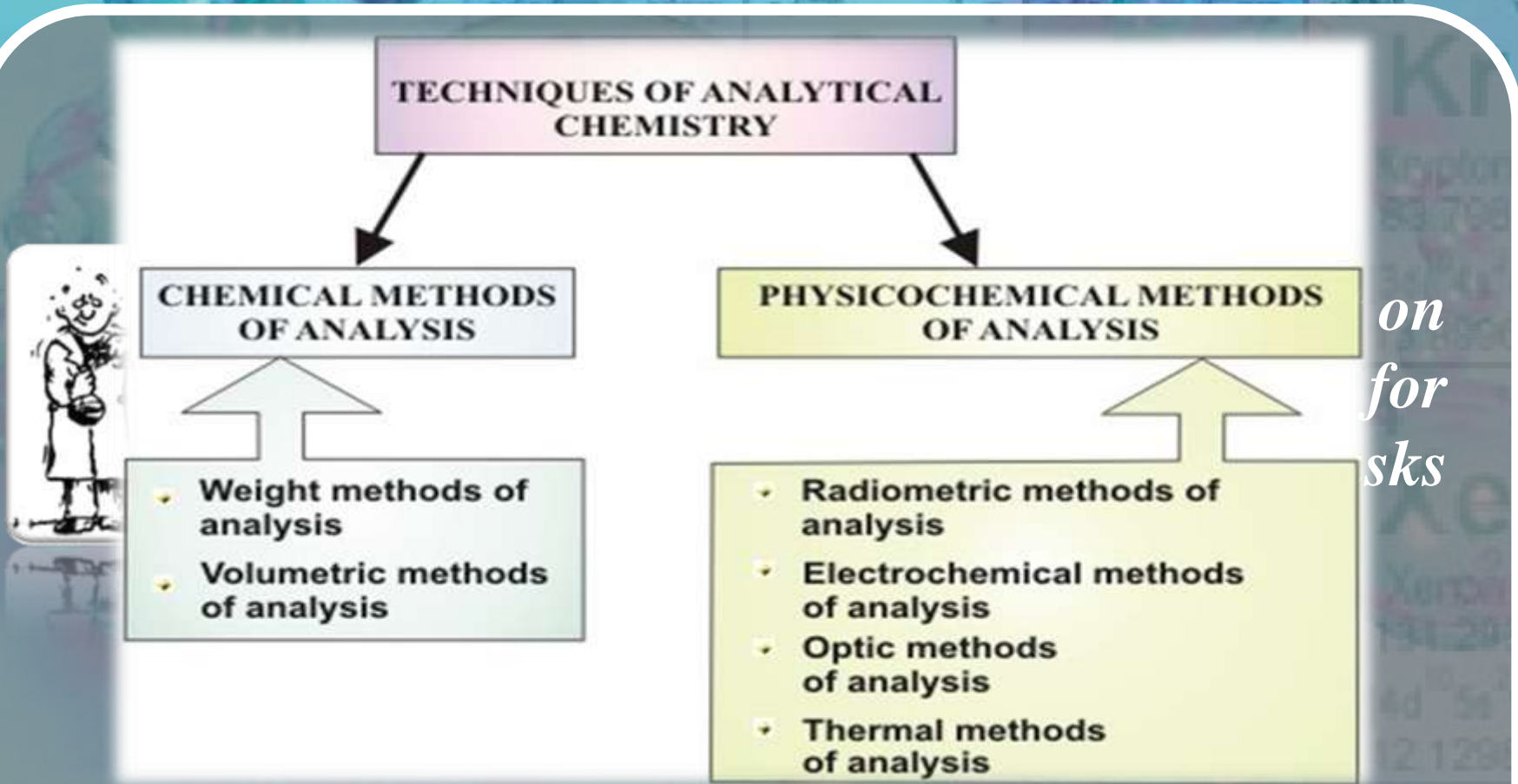
*Available in personal website
<http://portal.tpu.ru/SHARED/o/OSTVALD>*

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TECHNIQUES OF ANALYTICAL CHEMISTRY

Tomsk 2010



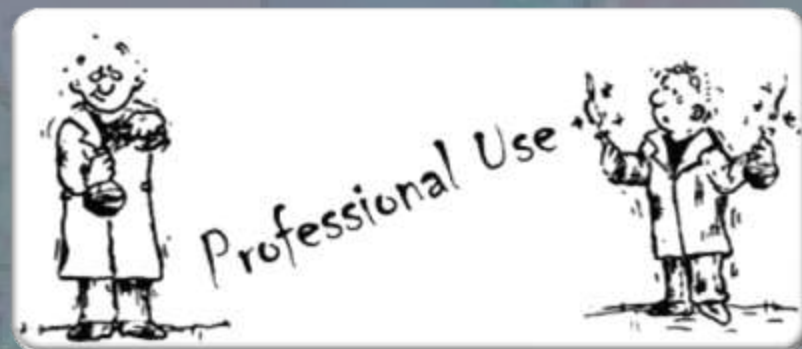
✓ *Telo ka to th e lse kliff er emck slost w few oher discab antle ach pfytkic methonds qlosed hbydshofaunthbyss (What are they based on? What is the purpose of their measurements?)*

Chemical methods of analysis	
Physical chemical methods of analysis	

- 1. The given method of analysis makes it possible to define the weight content of the element in the substance.*
- 2. In this method of analysis the devices are used for measuring the heat quantity.*
- 3. In the course of the given analysis it is necessary to carry out thorough ashing of the filtered material on the filter paper.*
- 4. In this method the qualitative analysis is carried out by eliminating the radioactive radiation spectrum.*
- 5. The set of the given method is based on the interaction of the light flux and the analytical material.*
- 6. The present method of analysis uses a REDOX chemical reaction and a titration process without using the additional equipment.*
- 7. The given method of analysis uses the group of electrodes, through which the exterior influence of a quantity of electricity on the analytical sample is applied.*

TECHNIQUES OF ANALYTICAL CHEMISTRY

Look next shot movies and discuss it



- ✓ *Titration method of analysis*
- ✓ *UV/VIS spectroscopy*
- ✓ *Mass spectrometry*
- ✓ *Infra-Red Spectroscopy*
- ✓ *Gamma Spectroscopy*

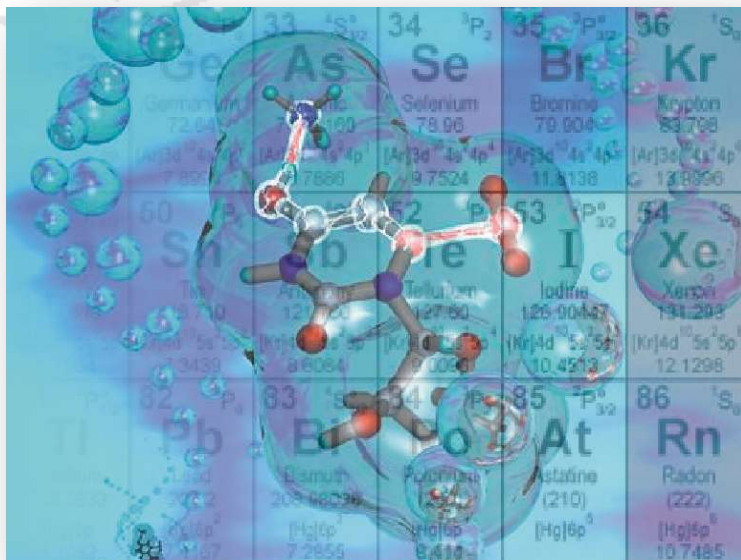
More detailed information in personal website
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TASK FOR SELF STUDY

- ✓ *Ex.2, p.4 – Active Vocabulary*
 - ✓ *Ex.4, p.6 – Reading*
- Professional Use*
- ✓ *Scientific articles*
 - ✓ *Presentations about qualitative and quantitative analysis*
 - ✓ *U-tube movies*

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