

THESIS REVIEW

TITLE:

**PLANAR ARTICLES FOR TECHNICAL, BIOMEDICAL AND
THERAPEUTICAL APPLICATIONS**

AUTHORESS:

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I. Basic data on the submitted dissertation

The dissertation thesis contains 149 pages and 67 figures. It is composed of an Introduction, three Main Chapters, Main Conclusion, Conference Contributions (7) and Curriculum vitae. The main part of the Thesis - main chapters are three independent works not interconnected by their topics.

II. General Comments

The submitted Thesis is written in English. Unfortunately it contains a number of typing errors and/or unclear formulations which sometime makes difficult for a reader to go through the text. Also some formulas of chemical substances are written without subscripts (e.g. Na_2HPO_4). The authoress should pay more attention to the final control of the text (e.g. p.68, 2nd line from bottom – “HCl – hydroxy chloride”).

III. Subjects of the submitted dissertation

The Introduction deals with some aspects of technical textiles

Chapter 1 “*Evaluation of DEX-HEMA for Controlled Drug Delivery*”.

This part is focused on synthesis of hydrogels and measurement of their important properties. The aim was to investigate possibilities of their applications for drug delivery systems. Osmotic and rheological properties have been measured. Also conditions for degradation have been studied.

Comments/Questions

1. the equation 1.17, p. 48 does not correspond to the text at p.43, 4th line from bottom
2. missing any description and/or interpretation of Fig.1.12
3. there is no description of the equation 1.15.
4. p.32, Figure 1.6, "*atm*" is not allowed unit in the SI-system
5. p.46, 3rd line from bottom "*Results are shown in the chromatogram*". There is not any chromatogram included in the Thesis.
6. p.52. 8th line from bottom: "*Standard curves are presented in Figure 1.16 as peak height as a function of concentration*". But Figure 1.16 description, p.53, says "*Concentration of free dextran molecules surrounded PB as a function of degradation time. ...*"
7. What is the meaning of error abscisae at figures in this Chapter (standard deviations, confident intervals, ...?)

Chapter 2 "*Preparation of Inorganic/Organic Nanocomposites*"

This part of the submitted Thesis describes methods of synthesis of cellulose based nanopolymers with TiO₂ and SiO₂. The list of prepared compounds is given. It would be very valuable to add some critical comments to possible use and/or properties of prepared nanocomposites.

Comments/Questions

1. What is the source of Ag₂S?
2. What is a reaction in which this compound arises?

Chapter 3 "*Evaluation of Cellulose Derivates for Wound Healing Dressing*"

The cellulose derivates are expected to be possible construction units of special wound healing plasters, which will depend on further investigation. Basic chemical and physical properties of polysaccharides, have been measured and evaluated. The measured parameters were density, surface tension, contact angle, light absorbance etc. This chapter is focused mainly on the presentation and formal description of results.

Comments/Questions

1. Figure 3.7 – Figure 3.9 and Figure 3.15, p.100-101, p.107: Why the straight line fitting was used. Coefficients of regression seem to be too small for a straight line approximation.
2. Figure 3.13, p.105, Figure 3.20, p.111: What was the filling of the cuvette space. It is well-known that air shows strong absorbance in the UV-region. Is this not the reason for very high absorbance values around 190 nm?

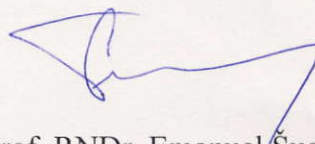
IV. Conclusion

Experimental results are described and evaluated. There is no doubt that the authoress possesses the abilities required for scientific experimental work and/or the results interpretation. Submitted thesis thus corresponds to required criteria. Therefore I can

recommend this thesis to be defended.

After a successful defence the candidate can gain the scientific degree Ph.D.

Brno, the 20th of May, 2011



Prof. RNDr. Emanuel Šucman, CSc.