

## **Diploma Thesis Classification**

**Topic:**                      **Relation between needle and needle-less electrospinning**

**Student:**                      Adnan Ahmed Mazari

**Thesis classified by:**      Ing. Kateřina Rubáčková, MTD

This work describes polymeric solution properties and its process parameters of needle and needle-less electrospinning techniques. It simultaneously depicts relation between them. The volume and technical topic of this Thesis fulfils the requirements for technical level of such a work, though the level of implementation is rather low.

### **1. Theory**

The theory related to this work was clearly described. Chapters writing about the needle electrospinning were logically divided into the subchapters and individual parameters were fairly understood. Theory of Needle-less electrospinning was described in a little simple way and could have been done more precisely. It would be more logic to place the chapter talking about PEO after detailed description of each type of electrospinning techniques.

### **2. Experimental part**

Lot of effort was put into the practical part of the Final Thesis. Student presents a huge series of experiments, which demonstrate his hard work. However, there are quite some shortcomings, which need to be pointed out.

There is no consistency in marking individual Polymeric solutions in Tables. Tables 4, 9, 10 and 11 are using different labeling, which makes it hard for reading and evaluation. I would prefer to add one summarizing table with all measured parameters to clearly compare and search in the results.

Table 12 is not clear at all. For example PEO 100,000, 12% of concentration is suddenly on the list while it is not mentioned in previous tables, also PEO 100,000 of 6% of a concentration is not previously mentioned.

There is no consistency in Graphs formats, fonts and colors. There is some missing information at important Figures labels (in Figure 30 in EM Images the percentage of NaCl is missing).

I miss some statistic data on Non-fibrous area (NFA) measurement, also detailed description of how NFA numbers for each sample were obtained.

### 3. Discussions, conclusion

Some statements and conclusions are confusing. Student uses many theoretical explanations and only a few real conclusions which are coming from the experiments. Confusion in using words needle-less versus needle spinning.

Conductivity as one of the discussed parameters was once assumed as not important for spinnability while other time the effect of conductivity was confirmed.

Related question:

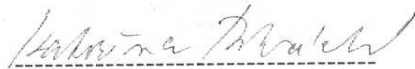
PEO 400,000 g/mol 6% conc/0% NaCl – Could you give a comment on what solution with very low conductivity, the highest surface tension, and relatively high viscosity giving the highest throughput?

With respect to all above mentioned facts, I am grading the student with a grade **"GOOD"**

S ohledem na výše uvedená fakta hodnotím práci známkou

**dobře**

Liberec 31.května 2011

  
Ing. Kateřina Rubáčková, MTD