

Title of your thesis

L<sup>A</sup>T<sub>E</sub>X

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A thesis submitted for the degree of

*PhilosophiæDoctor (PhD), DPhil,..*

year month

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## **Abstract**

Put your abstract or summary here, if your university requires it.

To ...

## Acknowledgements

I would like to acknowledge the thousands of individuals who have coded for the LaTeX project for free. It is due to their efforts that we can generate professionally typeset PDFs now.

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## **GLOSSARY**

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# Glossary

**DAPI** 4',6-diamidino-2-phenylindole; a fluorescent stain that binds strongly to DNA and serves to mark the nucleus in fluorescence microscopy

**DEPC** diethyl-pyro-carbonate; used to remove RNA-degrading enzymes (RNAases) from water and laboratory utensils

**DMSO** dimethyl sulfoxide; organic solvent, readily passes through skin, cryoprotectant in cell culture

**EDTA** Ethylene-diamine-tetraacetic acid; a chelating (two-pronged) molecule used to sequester most divalent (or trivalent) metal ions, such as calcium ( $\text{Ca}^{2+}$ ) and magnesium ( $\text{Mg}^{2+}$ ), copper ( $\text{Cu}^{2+}$ ), or iron ( $\text{Fe}^{2+}$  /  $\text{Fe}^{3+}$ )

## **GLOSSARY**

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# 1

## Introduction

### 1.1 put section name here

Write your text without any further commands, like this:.... Any organised system requires energy, be it a machine of some kind or a live organism. Energy is needed to win the uphill battle against entropy and pull together lifeless molecules to be able to do something in this world, like complete a PhD.

#### 1.1.1 Name your subsection

Different organised systems have different energy currencies. The machines that enable us to do science like sizzling electricity but at a controlled voltage. Earth's living beings are no different, except that they have developed another preference. They thrive on various chemicals.

Most organisms use polymers of glucose units for energy storage and differ only slightly in the way they link together monomers to sometimes gigantic macromolecules. Dextran of bacteria is made from long chains of  $\alpha$ -1,6-linked glucose units.

Starch of plants and glycogen of animals consists of  $\alpha$ -1,4-glycosidic glucose polymers (1). See figure ?? for a comparison of glucose polymer structure and chemistry.

Two references can be placed separated by a comma (1; 2).

**Figure 1.1: A common glucose polymers** - The figure shows starch granules in potato cells, taken from Molecular Expressions.

Insulin stimulates the following processes:

## 1. INTRODUCTION

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**Figure 1.2: Title - Caption**

- muscle and fat cells remove glucose from the blood,
- cells breakdown glucose via glycolysis and the citrate cycle, storing its energy in the form of ATP,
- liver and muscle store glucose as glycogen as a short-term energy reserve,
- adipose tissue stores glucose as fat for long-term energy reserve, and
- cells use glucose for protein synthesis.

Oxide	A Glass	C Glass	D Glass	E Glass	ECR Glass	R Glass	S-2 Glass
SiO <sub>2</sub>	63-72	64-68	72-75	52-56	54-62	55-60	64-66
Al <sub>2</sub> O <sub>3</sub>	0-6	3-5	0-1	12-15	9-15	23-28	24-25
B <sub>2</sub> O <sub>3</sub>	0-6	4-6	21-24	7-12	-	0-0.35	-
CaO	6-10	11-15	0-1	15-20	17-25	8-15	0-0.2
MgO	0-4	2-4	-	2-5	0-4	4-7	9.5-10
ZnO	-	-	-	-	2-5	-	-
BaO	-	0-1	-	-	-	-	-
Na <sub>2</sub> O+K <sub>2</sub> O	14-16	7-10	0-4	0-1	0-2	0-1	0-0.2
TiO <sub>2</sub>	0-0.6	-	-	0-1.5	0-4	-	-
Fe <sub>2</sub> O <sub>3</sub>	0-0.5	0-0.8	0-0.3	0-0.8	0-0.8	0-0.5	0-0.1

**Table 1.1: Composition ranges for glass fibres (in wt.%).**

Oxide	A Glass	C Glass	D Glass	E Glass	ECR Glass	R Glass	S-2
Density, g/cm <sup>3</sup>	2.44	2.52	2.11-2.14	2.58	2.72	2.54	
Tensile Strength, MPa (23 °C)	3310	3310	2415	3445	3445	4135	
Youngs Modulus, GPa (23 °C)	68.9	68.9	51.7	72.3	80.3	85.5	
Elongation, %	4.8	4.8	4.6	4.8	4.8	4.8	

**Table 1.2: Properties of glass (Hartman, Greenwood et al. 1996).**

$$I_a = I_0 - I_t = I_0(l - 10^{\epsilon C l}) \quad (1.1)$$



Nomenclature	Typical chemistry
Film formers	Epoxies, polyesters, PVAc, EVAc, polyolefins, and polyurethans, etc.
Lubricants	Imidazolines, tetraethylene amide, mineral oil/amide ester, acid amide, polyeth
Emulsifiers	Polyoxyethylene nonylphenyl ether, EO/PO condensate, polyoxyethylene octylp
Coupling agents	Silanes, titanates, zirconates
Antistats	Metal halides, quat. ammonium, etc.
pH control	Organic acids/bases
Nucleating agents	See patent literature

**Table 1.3: Glass fibre size chemistry summary (Hartman, Greenwood et al. 1996).**

Oxide	Glass 1	Glass 2	Glass 3	Glass 4	Glass 5
SiO <sub>2</sub>	55.24	54.98	55.16	54.83	64.14
CaO	17.94	17.88	17.94	17.87	1.58
Al <sub>2</sub> O <sub>3</sub>	12.96	12.91	12.95	12.91	6.46
B <sub>2</sub> O <sub>3</sub>	9.97	9.93	9.97	9.93	16.27
MgO	2.99	2.98	2.99	2.98	0.39
Na <sub>2</sub> O	0.50	0.50	0.50	0.50	10.72
Sm <sub>2</sub> O <sub>3</sub>	0.42	0.83	-	-	-
SmF <sub>3</sub>	-	-	0.50	0.99	0.45
SO <sub>3</sub>	0.30	0.30	0.30	0.30	0.30
Fe <sub>2</sub> O <sub>3</sub>	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
TiO <sub>2</sub>	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
K <sub>2</sub> O	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Σ	100.3	100.3	100.3	100.3	100.3

**Table 1.4: Compositions of prepared glasses (in wt.%).**

## 1. INTRODUCTION

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<b>Material</b>	<b>Purity</b>
Magnesium oxide	$\geq 99.00\%$
Calcium carbonate	$\geq 99.00\%$
Boric acid	$\geq 99.99\%$
Aluminium oxide	$\geq 99.00\%$
Samarium oxide	$\geq 99.90\%$
Samarium fluoride	$\geq 99.99\%$
Quartz sand	$\geq 99.70\%$

**Table 1.5: Purity of chemicals used for glass preparation.**

<b>Material</b>	<b>Purity</b>
X-Ray machine type:	Philips XPert - APD
K $\alpha$ 1 ( $\text{\AA}$ ):	1.540598
Anode:	Cu
Scan range ( $2\Theta$ ):	5.0 85.0
Scan speed ( $2\Theta.\text{sec}^{-1}$ ):	0.0025

**Table 1.6: X-Ray diffraction measurements conditions.**

$$E = Nh\nu = \frac{Nhc}{\lambda} \quad (1.2)$$

$$E_e - E_g = h\nu \quad (1.3)$$

$$\gamma_{SL}dA + \gamma_{LG}dA < \gamma_{SG}dA \quad (1.4)$$

$$\gamma_{SL} + \gamma_{LG} < \gamma_{SG} \quad (1.5)$$

$$SC = \gamma_{SG} - (\gamma_{SL} + \gamma_{LG}) \quad (1.6)$$

$$\gamma_{SG} = \gamma_{SL} + \gamma_{LG}\cos\Theta \quad (1.7)$$

$$\cos\Theta = \frac{(\gamma_{SG} - \gamma_{SL})}{\gamma_{LG}} \quad (1.8)$$

$$\tau = \frac{F}{\pi d \bar{l}} \quad (1.9)$$

$$l_c = \frac{4}{3} \bar{l} \quad (1.10)$$

$$l_c = \frac{4}{3} \bar{l} \quad (1.11)$$

## 1. INTRODUCTION

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## **2**

# **Aims of the project**

### **2.1 Final aim**

Our ultimate goal is...

### **2.2 Preliminary aims**

There will be several preliminary scientific targets to be accomplished on the way...

## **2. AIMS OF THE PROJECT**

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**3**

## **Discussion**

### 3. DISCUSSION

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4

## Materials & methods

#### 4. MATERIALS & METHODS

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[2] NAME. **Title.** *Journal of Sth*, 2006. 15

# References

[1] LASTNAME. **Title.** *Journal of Sth*, 2007. 15

## **Declaration**

I herewith declare that I have produced this paper without the prohibited assistance of third parties and without making use of aids other than those specified; notions taken over directly or indirectly from other sources have been identified as such. This paper has not previously been presented in identical or similar form to any other German or foreign examination board.

The thesis work was conducted from XXX to YYY under the supervision of PI at ZZZ.

CITY,