**Title. Title. Title. Title. Title. Title. Title. Title. Title. Title. Title. Title. Title. Title. Title.Title. Title**

**Your full name - Dissertation**

***Figure(s) of your Choice***

***(can be several small figures or a big one)***

**Title of the Thesis**

vorgelegt von

Title

Name Surname

ORCID: xxxxxxxx

von der Fakultät III-Prozesswissenschaften

der Technischen Universität Berlin

zur Erlangung des akademischen Grades

Doktor/Doktorin der xxxxx (e.g. Ingenieurswissenschaften)

-Dr.-xxx (e.g. Ing.)-

genehmigte Dissertation

Promotionsausschuss:

Vorsitzender: Title, Name, Chair/Instiute/Company, City, Country (if foreign)

Gutachter: Title, Name, Chair/Instiute/Company, City, Country (if foreign)

Gutachter: Title, Name, Chair/Instiute/Company, City, Country (if foreign)

Gutachter: Title, Name, Chair/Instiute/Company, City, Country (if foreign)

Tag der wissenschaftlichen Aussprache: xx. month year

 Berlin, year

# Abstract

- *1 page max.*

*- Abstract is necessary in English AND German.*

*- Content: One sentence introduction, background, aim of the work (scientific niche and how to solve it), results (most important, be specific, take it from the 10 Theses of the work), conclusion (importance to the field).*

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# Zusammenfassung

German Abstract

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# Declaration of Originality / Eidesstattliche Erklärung

*Not obligatory, since you have to sign the corresponding phrases in the application form of the faculty anyway.*

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Berlin, date

Your name

# Acknowledgements

* *Must contain funding sources / financial support, incl. projects with project number.*
* *Must contain all people that contributed to thesis (as the thesis is a single person authorship publication and only in this chapter there is space to articulate contributions). Missing the announcement of contributors is a scientific fraud (same as if you would leave an author away in a publication).*
* *In cumulative thesis: also all co-authors of publications have to be listed.*

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# List of Abbreviations

*Structure of abbreviation list might be different, depends on the thesis.*

## General

etc. et cetera

i.e. id est

e.g. exempli gratia

## Symbols *(e.g. for mathematical equations)*

*X* ZZZ

# List of publications *(cumulative case only)*

* *Each entry in the list should end with EITHER (i) an active, clickable DOI link for papers that are already online, (ii) journal name and date of submission for papers that are in the review process OR (iii) the phrase “In preparation“ for manuscripts that still have to be submitted to a journal.*
* *The co-author contributions in the papers should be stated to show what each co-author did. Do not use percentage contributions (e.g. author A contributed x%)!, it should be stated exactly what each person did in the papers. Describe your own contribution for each of your papers as well.*
* *Such a list is also provided on an extra sheet to the faculty.*

# Introduction

- *1-2 pages max.*

*- Should introduce to the general subject of the thesis and sum up the structure of the work (overview).*

*- Has to describe the scientific gap, niche.*

*- Clearly different from literature review!*

*- Should not double with abstract!*

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# Scientific Background *(or Literature Review)*

- *Presents state of the art.*

*- Should be like journal or book review. List most important articles in relation to thesis / your research.*

*- Focus on most recent articles / literature. (It is important to focus on articles of the last 3-5 years!!! to show that your research is at the edge of science.)*

*- Beside understanding of the topic it helps to connect to results and to discussion.*

*- Chapter can have subtitles, which represent the different subjects that have to be introduced.*

*- Own citing should be avoided and better placed into the results part (for cumulative thesis). Always avoid self-copying / self-plagiarizing!*

*But an own review can be integrated as a chapter or parts of it can be integrated in the text (if the review covers more than the thesis field). Indicate on the first relevant page as a footnote or in the section title: “parts of it were taken from …” and modify). (Discuss with your main supervisor!!!!)*

*This review also needs to be listed in the publication list at the end as well in cumulative case.*

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# Research Questions *(or Hypothesis)* and Aim of the Project

*- Should introduce research questions (RQ1-x) / tasks /aim 🡪 then answer questions in the discussion, confirm or refute.*

*- These questions can also be hypothesis driven (research hypotheses).*

*Give short explanations (1-2 sentences) about the meaning of the questions / hypothesis and about the plan and actions how they should be answered / confirmed. Good example is Haringa:* [*https://repository.tudelft.nl/islandora/object/uuid%3A441ec955-cd8d-4ae0-b2f0-98fbf91a570a?collection=research*](https://repository.tudelft.nl/islandora/object/uuid%3A441ec955-cd8d-4ae0-b2f0-98fbf91a570a?collection=research) *.*

*- Questions need to be answered, hypothesis confirmed or refuted in the discussion.*

*- Discussion can be structured accordingly 🡪 subchapters, for example.*

*- It is important to think in advance, whether you decide for research questions or research hypotheses. The way or your decision has consequences for the discussion part (answering a question, evaluation of a hypothesis (accepting/rejecting).*

Here first: Short introduction into the topic/general aim.

1. *Question 1?*

Answer or explanation 1.

1. *Question 2?*

Answer or explanation 2.

1. *Question 3?*

Answer or explanation 3.

 ………………..

*x. Question x?*

Answer or explanation x.

# Materials & Methods

 *Should be structured like in an article, not like an SOP.*

*- In cumulative thesis: can be very short, do not repeat all the details of the publications* (you can refer to them for details).

*- 🡪 might be different from case to case, no absolute format for all.*

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# Results

* *Cumulative thesis: Summarize your results of all papers. Refer to the papers either in the text or the headlines of sub-chapters. Sub-chapters can be ordered according to the paper order order or according to experimental series, or …*
* *Monography: like in master thesis (end with best/most important result). Create sub-chapters.*

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# Discussion

- *Generally has a length of 10-20 pages.*

*- Discuss own results in relation to literature / state of the art, which you described in the scientific background.*

*- What is your contribution to science (and society)?*

*- How do your results improve the state of the art?*

*- Discussion starts from most important research questions and results (start with your general task/niche). This is different to the results section. Then go into details.*

*- Also needed for cumulative thesis, where each paper has discussion. But then wrap the discussion up / summarize for all, do not repeat it from the papers.*

*- Holistic approach: See the overall thesis, do not necessarily separate the discussion into the different papers (sometimes however it may make sense if the papers have different contents) 🡪 see the whole story.*

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# Conclusions

* *What you really conclude from your own work?*
* *What do you expect where the field of science is developing?*
* *What need other scientists to consider as a result of your own contribution?*
* Avoid references / citations in this chapter.

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# Outlook

* *Can be together with the conclusion in one section or separated.*
* *What you really conclude from your own work?*
* *What do you expect where the field of science is developing?*
* *What need other scientists to consider as a result of your own contribution?*
* Really look to the future.
* Where it goes further after your work?
* What do you propose? What is your vision?
* If you fail to answer any of your research questions, you might put it here as an outlook. But you need to discuss it!
* Avoid references / citations in this chapter.

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# **References**

* *Name and year should be mentioned in references in the text, e.g. (Junne et al. 2017, Neubauer & Junne 2016)*
* *Do not use numbers in the text.*
* *Reference list shall be alphabetically ordered.*
* *Each reference must be complete 🡪 include title, authors, journal, etc.*
* *Leave left a tap indentation at the 2nd and 3rd line of a reference.*
* *Example: Authors, Year. Title. Journal/Book/Manuscript/..., volume(issue) or edition: start page - end page or: pages.*

Claßen, J., Aupert, F., Reardon, K.F., Solle, D. and Scheper, T., 2017. Spectroscopic sensors for *in-line* bioprocess monitoring in research and pharmaceutical industrial application. Anal Bioanal Chem, 409(3): 651-666.

* *For cumulative thesis: One reference list after the thesis text, (having all references which are mentioned in introduction, scientific review, results, and discussion) at the end of the thesis but before the papers. 🡪 Also maintain the reference list after each paper.*
* *For monography: list all references in the end.*

# Theses

- *Written at the end of the thesis part (before the papers in cumulative case).*

*- 10 most important hypotheses should sum up the results of the work.*

*- Try to be as specific as possible!!!!*

*- Definition of a thesis (These):*

*o Theses are statements/claims resulting from the results of the work, for which proof was obtained within the framework of the results produced in the work.*

*o* [*https://wortwuchs.net/these/*](https://wortwuchs.net/these/) *(German)*

*o* [*https://writingcenter.unc.edu/tips-and-tools/thesis-statements/*](https://writingcenter.unc.edu/tips-and-tools/thesis-statements/)

*o* [*https://penandthepad.com/how-8229968-write-thesis-statement-science-report.html*](https://penandthepad.com/how-8229968-write-thesis-statement-science-report.html)

*o* [*http://www.cws.illinois.edu/workshop/writers/tips/thesis/*](http://www.cws.illinois.edu/workshop/writers/tips/thesis/)

*- You can also include 1-2 broader societal hypotheses based on the work. Nice examples can be found in Dutch theses.*

*- The 10 theses are a good basis for a condensed and specific abstract.*

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# Publications *(cumulative case only)*

* *Attach papers and manuscripts at the end of the thesis: formatted as in journal, with permission of the journal 🡪 complications might occur with the TU library if the papers are formatted differently in the thesis.*
* *An empty page (front side and back side) containing only the number of the following paper on the front side should be placed between the papers for separation (see following examples). This page should always start with the number in a block (functioning as a marker when the book is closed) on the right side.*
* *References: Leave the reference list after each paper and add a list of references from the introduction, scientific review, results, and discussion at the end of the thesis, but before the papers.*
* *For the figures of own articles permission has to be asked too (try to avoid copying figures).*
* *If a manuscript is attached, figures should not be placed in the end of the manuscript, but incorporated into the text.*

**I**

*1st Paper*

**II**

*2nd Paper*

**III**

*3rd Paper*

# Appendix

*Include all figures, tables, methods or other information material, which might be useful for the reader/ provide more information for better understanding of the thesis.*

## Second level numbered

### Third level numbered heading

## Second level numbered

### Third level numbered heading

# Curriculum vitae

*Photo (not obligatory)*

 **Name Surname**

 PERSONAL INFORMATION

Date of birth / place of birth: xxxxxxxxxxx

Marital status: xxxxxxxxxxx

Nationality: xxxxxxxxxxx

 EDUCATION

xx/yyyy - xx/yyyy text.text.text.text. text.text.text.text. text.text.text.text.

xx/yyyy - xx/yyyy text.text.text.text. text.text.text.text. text.text.text.text.

PRACTICAL AND WORKING EXPERIENCE

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xx/yyyy - xx/yyyy text.text.text.text.text.text.text.text.text.text.text.text.

 LANGUAGES

 Language 1 (native), language 2 (level x), language 3 (level y), …

*Short!, 1 page max., helps reviewers to introduce you or get to know key facts.*

*Structure can be changed, no template for this.*

*Note! For the publication at the TU library, no CV is wanted due to personal data safety.*

*Please cancel it from your dissertation including the list of contents.*

s

***List of recent Dissertations at the Chair of Bioprocess Engineering 🡪 you get this from Prof. Neubauer***

***(Backside of the thesis)***