



TECHNISCHE
UNIVERSITÄT
WIEN

INSTITUTE OF CHEMICAL, ENVIRONMENTAL &
BIOLOGICAL ENGINEERING

Ao.Univ.Prof. Dipl.-Ing. Dr. Franz WINTER
GETREIDEMARKT 9/166
A-1060 WIEN

Austria

TEL. +43 1/588 01-166301

FAX. +43 1/588 01-16699

Email: franz.winter@tuwien.ac.at

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Evaluation

of the PhD Thesis

Investigation of Tar Conversion over Biomass Char

by Agnieszka Korus

The PhD thesis of Ms. Agnieszka Korus is in the area of tar conversion over char from biomass. Tar conversion is a very important issue in the optimization of the gasification process.

The PhD thesis is well structured and consists of 5 main chapters with in total more than 200 pages. The literature is well cited and more than 120 references are used.

In Chapter 1 an introduction to the area is given as well as the aims of the work are presented. A focus of this work is given on the comparison of different wood species (i.e. pine, alder and beech) as biochar feedstock. Secondly the catalytic conversion of toluene as model tar component over these biomass chars are investigated.

In Chapter 2 a very good literature overview to the topic of tar release, catalysts for tar reforming, char preparation, biochar feedstock, analytical techniques and conversion of hydrocarbons is presented and well summarized.

The experimental work is well described and shown in Chapter 3. Besides the characterization of the feedstock i.e. the different wood types i.e. pine for coniferous wood, alder for soft hardwood and beech for hardwood the test rig is given and the conversion procedure explained. The design of the experiments is presented.

In Chapter 4 the experimental results about the char properties, the conversion of toluene, the comparison of the chars and commercial activated carbon as well as the conversion of toluene in the presence of O₂ are discussed and concluded.

In Chapter 5 the final conclusions are presented, putting the well structured measurements in a concise and clear picture.

The research methods developed and applied are well described and tested with due consideration of the research problem.

The material is of high standard. The source material is critically scrutinised and accounted for correct citations and references.

The linguistic form of the thesis is distinct and the figures layout clear. The text is consistent, logical and focused on the essential aspects of the work.

The results are well and also critically discussed. The analysis of the data is consistent and well found.

It is an excellent thesis which gives important input of results and knowledge to the research area of tar conversion using biomass chars.

Sincerely yours,



ao. Univ.Prof. Dipl.-Ing. Dr. Franz Winter