VIPP VALUES CREATED IN
FIBRE-BASED PROCESSES
AND PRODUCTS

RAGHU DESHPANDE

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THE INITIAL PHASE OF THE SODIUM BISULFITE PULPING OF SOFTWOOD DISSOLVING PULP

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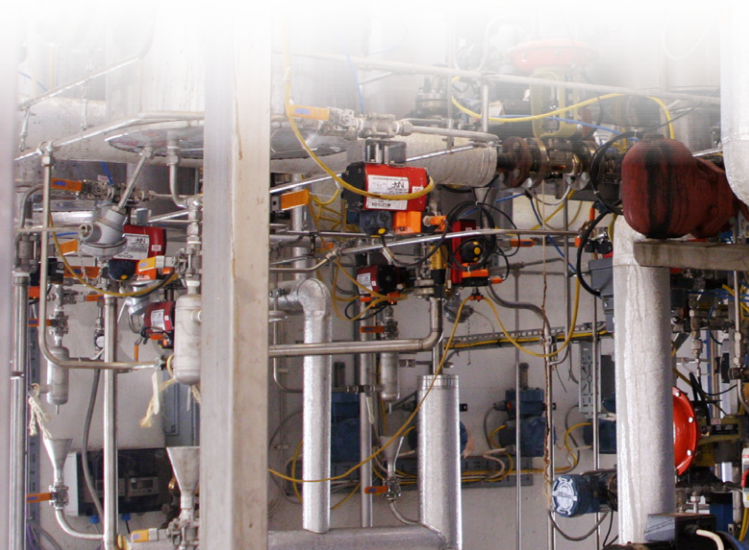
BIOGRAPHY

Raghu Deshpande is employed at MoRe Research AB, Örnskoldsvik, since 2012. His work incorporates knowledge on softwood dissolving pulp production using sulfite pulping technology. Raghu Deshpande obtained a Master of Science Technology in “Pulp and Paper Science” from Karnataka University, India in 2004. Before starting his doctoral studies he was working in “Wood and Pulp Research Centre” in Grasim Industries/Harihar Polyfibres in India, which is a part of Aditya Birla group.



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ABSTRACT

The sulfite pulping process is today practised in only a small number of pulp mills around the globe and the number of sulfite mills that use sodium as the base (cation) is less than five. However, due to the increasing interest in the wood based biorefinery concept, the benefits of sulfite pulping and especially the sodium based variety, has recently gained a lot of interest. It was therefore considered to be of high importance to further study the sodium based sulfite process to investigate if its benefits could be better utilized in the future in the production of dissolving pulps. Of specific interest was to investigate how the pulping conditions in the initial part of the cook (≥ 60 % pulp yield) should be performed in the best way.

Thus, this thesis is focused on the initial phase of single stage sodium bisulfite cooking of either 100 % spruce or 100 % pine wood chips. The cooking experiments were carried out with either a lab prepared or a mill prepared cooking acid and the temperature and cooking time were varied. Activation energies for different wood components were investigated as well as side reactions concerning the formation of thiosulfate and sulfate.

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LIST OF PUBLICATIONS

Publications Included in the Licentiate Thesis

I. The initial phase of sodium bisulfite pulping of spruce, Part I
Raghu Deshpande, Lars Sundvall, Hans Grundberg and Ulf Germgård
Accepted for publication in Cellulose Chemistry and Technology

II. The influence of the temperature on the initial phase of sodium bisulfite pulping of spruce
Raghu Deshpande, Lars Sundvall, Hans Grundberg and Ulf Germgård
O Papel, Volume 76, num.4, pp. 56-61, April 2015.

III. The influence of different types of bisulfite cooking liquors on the pine wood components
Raghu Deshpande, Lars Sundvall, Hans Grundberg and Ulf Germgård
Submitted in Bioresources- Reviewing stage

IV. Some process aspects on ingle stage bisulfite pulping of pine
Raghu Deshpande, Lars Sundvall, Hans Grundberg and Ulf Germgård
Accepted in NPPRJ

V. Some process aspects on acid sulfite pulping of softwood
Raghu Deshpande, Lars Sundvall, Hans Grundberg and Ulf Germgård

Submitted in Carbohydrate Polymers,Elsevier.

Other publications

“The magic of sulfite pulping: The critical first stage of a dissolving pulp cook”, Poster presentation at the Avancell conference at Chalmers University of Technology, Gothenburg, Sweden, October 8-9, 2013.

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