It is a pleasure for me to introduce this special issue a special issue featuring selected papers from the *2nd Nordic Wood Biorefinery Conference*, held on September 2-4, 2009, in Helsinki, Finland.

Increased global interest in the utilisation of different types of biomass raw materials for the production of a variety of biochemicals, biopolymers, biomaterials, biofuels and other energy products is a distinct trend in today's chemical industry and in other sectors. The need for improved sustainability is clearly one of the key drivers.

The relatively new term "biorefinery" is a frequently used keyword and there are currently several definitions available. For example, the IEA Bioenergy Task 42 (Biorefinery) has defined biorefining as "the sustainable processing of biomass into a spectrum of marketable products (food, feed, materials, chemicals) and energy (fuels, power, heat)".

Wood is a natural choice of raw material for biorefinery in the areas where there are plenty of forests or tree plantations. Pioneering wood biorefinery operations were used 100-150 years ago when all, or nearly all, industrially used methanol, acetic acid, acetone, oxalic acid and other chemicals were manufactured from wood raw materials. During several decades, pulp and paper industry tested and adopted different processes for the isolation and manufacture of several pulping by-products (derived from all wood constituents) in order to approach "pulp mill biorefining".

The more modern concepts for the pulp mill biorefineries, now under intensive R&D work, aim at highly integrated forest industry systems with optimised total energy balances and maximised output of different value-added products. The research work in this area has remarkably advanced during the recent years. This resulted in the need to establish an international wood and pulp mill biorefinery forum where researchers, industry representatives and policy makers could meet to exchange information and ideas. To fulfil this need, Innventia from Sweden and VTT from Finland initiated in 2008 an international conference series entitled *Nordic Wood Biorefinery Conference, NWBC*.

The present issue of *Cellulose Chemistry and Technology* contains the first set of papers based on the presentations made during the *2nd Nordic Wood Biorefinery Conference*. Although these represent only a fraction of more than 120 oral and poster presentations given at the conference, they all demonstrate fascinating and realistic opportunities of biorefining of wood and other lignocellulose materials.

There is currently a lot of interest in the conversion of the present pulp mills (particularly kraft pulp mills) to more integrated biorefineries. The cases described deal with different new value-added products, derived from both carbohydrate and lignin fractions. The hot topics include different ways to isolate and use hemicelluloses and the sugar chemicals derived from them. Different concepts of integrating biofuel production into the pulp and paper mill operations have also been developed and demonstrated on different scales.

Another selection of papers will appear in the second special issue dedicated to the *2nd Nordic Wood Biorefinery Conference.*

Klaus Niemelä