

Preface

Materials Science is a rather new field of science concentrating to study the structure and properties of materials and the phenomena occurring in the structure to determine or control the properties. In principle, the materials include materials of all kind, i.e., synthetical as well as those produced by Nature. For practical reasons, the main interest until yet has, however, been directed to construction materials.

On the basis of atomic bondings, materials science divides the materials into three basic categories: Metals, ceramics and polymers. In addition, there exist and are continuously developed different kinds of composite materials within or among these basis groups of materials. Wood is a good example of a composite, where all the structural constituents are polymers. This is why wood, as a whole, is a polymeric material.

Materials science is an interdisciplinary field of science, transversal in the direction to the classical fields of science. In the case of wood, one could describe it by a table having one foot in biology, one in chemistry, one in physics and one in engineering science and applications. Among the material scientists, there are very few, who study or teach all the basic groups of materials. Instead, it is quite common to concentrate only on one among the different basic groups of materials and even there on certain specific material or on certain specific type of material.

As wood is entirely polymeric in structure, one would easily expect that the polymer scientists would be in great majority among the materials scientists studying wood. Unfortunately, this is not true, the number of polymer scientists is very small among the wood scientists, even internationally. The study of wood has traditionally been left for the classical foresters and chemists. This reflects itself also in the number of the authors of the present publication.

During the recent years, three areas in the study of wood have been under great interest. In chemistry, the extractives of wood have received great interest as a source of precursors to a multitude of medically important compounds. In physics, the micro focus X-ray technique has given hopes of an applicable new method for the nano scale study of wood on specimens more macroscopic than in transmission electron microscopy. In handling of wood, thermal treatment has received attention as an acceptable and more ecological method for increasing the rot resistance of wood. Also the industry of musical instruments is interested in the properties reachable by properly done thermal treatments. All of these three aspects are presented among the papers of the present publication. Additionally, the papers describe the mutual relationship between strengths in a soft wood and degradation of soft wood under a period of several thousand years. Before the actual papers, a background description is given to clarify the common knowledge level in the topics concerned in the papers.