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Editorial

Wood Protection and Preservation

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Abstract: Wood is an advantageous building material in many respects, but it is biodegradable and therefore requires protection when used in highly hazardous applications. This Special Issue on 'Wood Protection and Preservation' comprises 19 papers representing a wide range of aspects related to the field and gives timely examples of research activities that can be observed around the globe.

Keywords: biological durability; decay fungi; wood borers; wood protection by design; wood preservatives; chemical wood modification; thermal wood modification; water repellants; test methods; service life planning; performance specification

Globally, the use of non-renewable resources needs to be reduced. In this respect, wood and wood-based products can play a key role as they are generally low in embodied CO_2 and can be gained from sustainable forest resources. Wood has numerous advantages compared to other building materials, such as a high strength–weight ratio, good thermal insulation, easy machinability and appealing aesthetics. However, its durability against different biological agents is limited and requires consideration when wood is exposed to moisture, and thus to favorable conditions for decay.

In highly hazardous applications, the natural durability of wood can be insufficient, and wooden elements need to be protected by design. Alternatively, wood durability can be enhanced through wood preservatives or modification systems. In recent years, several highly effective wood preservatives have been banned in different countries as they harm human health and the environment. Innovative approaches for improving wood durability are being sought.

We encouraged studies from all fields, including method development, experimental studies, monitoring approaches and models, to contribute to this Special Issue, to promote knowledge about wood durability mechanisms and strategies for the protection and preservation of wooden structures and wood-based building materials.

The Special Issue comprises 19 papers by authors from 14 countries in Asia, North America and Europe. They represent a wide range of aspects related to wood protection and wood preservation and give timely examples of research activities that can be observed around the globe. Several authors reported on processes of thermal modification [1–6] and different chemical wood modification techniques [2,3,5,7–10], which are among the latest alternative wood protection methods without the use of biocides. New preservatives and assessment methods of preservative-treated wood products are presented [10,11], as well as studies on the natural durability of wood [12], fire-retardant treated wood [13,14], the effect of concrete on wood durability [15] and different novel surface modification techniques using plasma [13,14,16,17]. Besides biological durability [3,6,10,12,15,18,19], the mechanical properties [3,8,11], moisture performance [1,3,5,12,14,18], bonding properties [6,14] weathering stability [4] and the corrosiveness [7] of differently treated wood were investigated and reported within this Special Issue. Examples of research on fungal biology [9], service life planning with wood [18] and test methodology [12] were also included and complete the spectrum.

Conflicts of Interest: The author declares no conflicts of interest.

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