

# Advances in Understanding Wood Product Performance

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## 1. INTRODUCTION

With dwindling forest resource of the world there is growing awareness for using products more efficiently. Wood scientists and technologists are continually seeking ways to develop technologies which will ensure that the products made closely match the requirements of the users. This requires process improvements in characterizing raw material, in developments of products and in the evaluation of manufactured products. Here we provide an example where we have made use of electron microscopy techniques to more precisely understand the nature of the relationship between the microdistribution of middle lamella lignin in rubberwood cells and the surface characteristics of the MDF fibers produced from this wood.

Interest in the manufacture and use of fiber-based products is growing rapidly, because fibers can be manipulated more easily than the solid wood, thus enhancing our capability for a better control and monitoring of processes and to produce a wider range of products (reviewed in Singh and McDonald 2000). Additionally, fiber-based products can be more easily and precisely tailored to suite market requirements. The use of fibers also provides opportunities for using a mix of both natural and synthetic fibers in product formation, and thus to help reduce the ever increasing pressure for use of the worlds wood resource.

By an example of the MDF fibers, in this communication we examine the importance of using transmission electron microscopy in understanding the relationship between the pattern of middle lamella lignin distribution in unprocessed wood and surface features of the MDF fibers.