

ABSTRACT

In the last few years the greenhouse emissions that cause changes in the earth's climate have considerably increased. This rise is related to the major consumption of fossil-derived energy sources. This thesis is focused on the design of sustainable paths in order to obtain interesting compounds for the industry starting from biomass raw materials. The thesis is divided into two chapters having in mind the application of the product: compounds for the fine chemical industry or biofuels.

The first chapter is related to the synthesis of myrtanal, an interesting compound for the fragrance industry because of its odoriferous properties, via a sustainable path, efficient and environmentally feasible process. It is based on the rearrangement of a terpenoid in the presence of a heterogeneous catalyst which can be recycled several times without losing any activity.

In the second part of the thesis, a study on the production of second generation biofuels has been carried out starting from lignocellulosic biomass. This study deals with the third and fourth stage of the Sylvan Process to obtain diesel. In the third stage of the process, 2-methylfuran (trivial name: Sylvan), a precursor with a suitable number of carbon atoms is produced. The final compound is a diesel fuel and provides high quality to the mixture. Lastly, the integration of the process in a paper mill producing cellulosic fibres is evaluated.