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| Sommario/riassunto | This book explores the processing, properties, and applications of Posidonia oceanica, an abundant marine plant found in the Mediterranean Sea, for the production of cellulose and nanocellulose. It demonstrates the treatment of Posidonia oceanica waste through chemical and mechanical modifications to produce a renewable, |

biodegradable nanomaterial known as nanocellulose. The unique properties of this nanocellulose enable its applications as an adsorbent material for dye removal, as nanofibers in composites, and in macromolecular materials. This book is an essential resource for university departments in chemistry, materials science, and physics, as well as research institutions and industries interested in the valorization of Posidonia oceanica residues. It provides insights into using this marine biomass to produce cellulose derivatives and/or lignocellulosic fibers for fiber-reinforced composites and papermaking applications. Furthermore, the book consolidates valuable knowledge about Posidonia oceanica and its multi-scale valorization for the development of innovative materials.