Water is one of the essential resources on our planet. Therefore, fresh water and the recycling of waste-water are very important topics in various areas. Energy-saving green technologies are a demand in this area of research. Photocatalysis comprises a class of reactions which use a catalyst activated by light. These reactions include the decomposition of organic compounds into environmental friendly water and carbon dioxide, leading to interesting properties of surfaces covered with a photocatalyst: they protect e.g. against incrustation of fouling matter, they are self-cleaning, antibacterial and viricidal. Therefore, they are attractive candidates for environmental applications such as water purification and waste-water treatment. This book introduces scientists and engineers to the fundamentals of photocatalysis and enlightens the potentials of photocatalysis to increase water quality. Also, strategies to improve the photocatalytic efficacy are pointed out: synthesis of better photocatalysts, combination of photocatalysis with other technologies, and the proper design of photocatalytic reactors. Implementation of applications and a chapter on design approaches for photocatalytic reactors round off the book. Photocatalysis and Water Purification is part of the series on Materials for Sustainable Energy and Development edited by Prof. G.Q. Max Lu. The series covers advances in materials science and innovation for renewable energy, clean use of fossil energy, and greenhouse gas mitigation and associated environmental technologies.

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