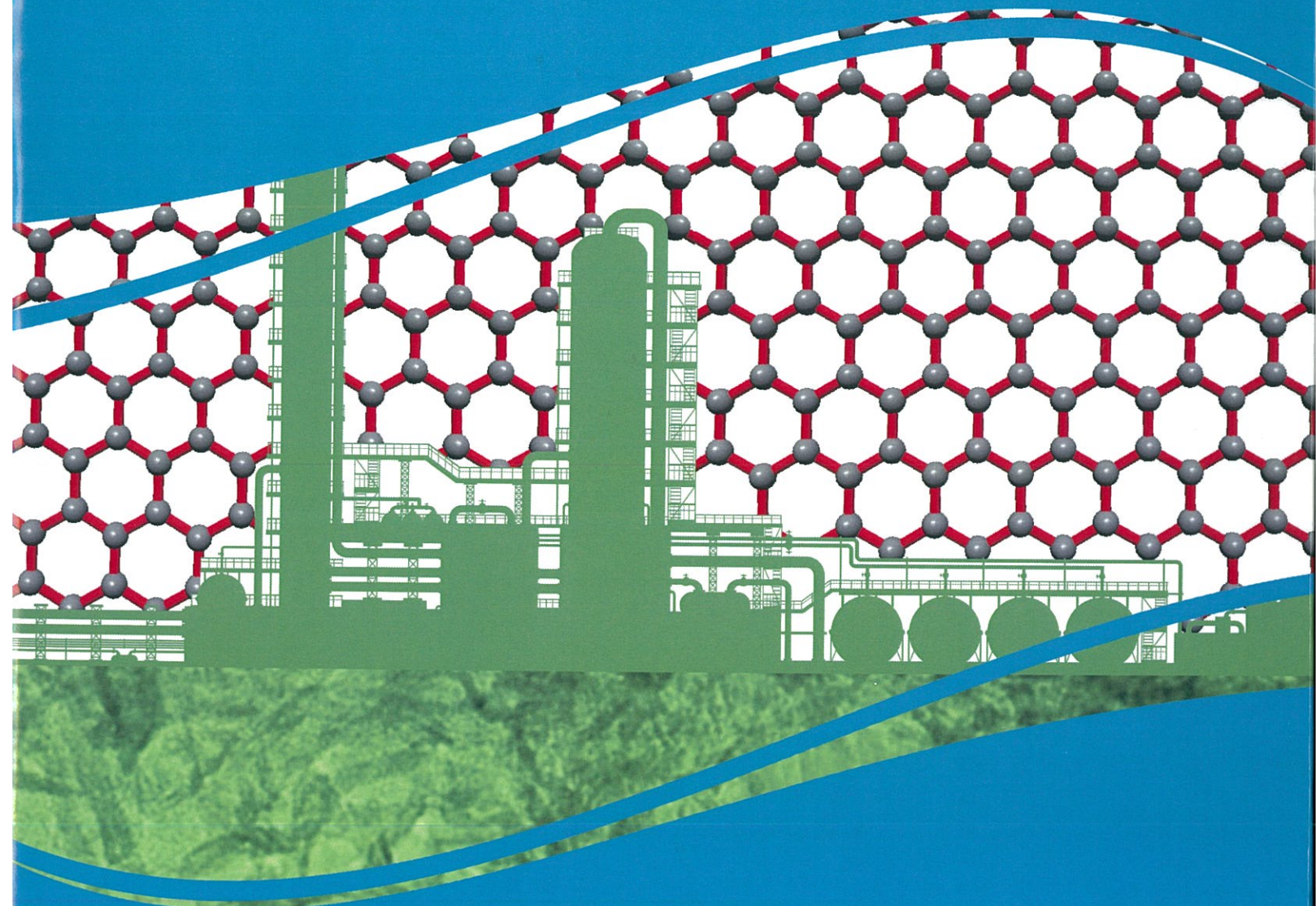


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Applying Nanotechnology to the Desulfurization Process in Petroleum Engineering



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Applying Nanotechnology to the Desulfurization Process in Petroleum Engineering

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Chapter 13

Advances in the Reduction of the Costs Inherent to Fossil Fuels' Biodesulfurization towards Its Potential Industrial Application

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ABSTRACT

Biodesulfurization (BDS) process consists on the use of microorganisms for the removal of sulfur from fossil fuels. Through BDS it is possible to treat most of the organosulfur compounds recalcitrant to the conventional hydrodesulfurization (HDS), the petroleum industry's solution, at mild operating conditions, without the need for molecular hydrogen or metal catalysts. This technique results in lower emissions, smaller residue production and less energy consumption, which makes BDS an eco-friendly process that can complement HDS making it more efficient. BDS has been extensively studied and much is already known about the process. Clearly, BDS presents advantages as a complementary technique to HDS; however its commercial use has been delayed by several limitations both upstream and downstream the process. This study will comprehensively review and discuss key issues, like reduction of the BDS costs, advances and/or challenges for a competitive BDS towards its potential industrial application aiming ultra low sulfur fuels.

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