Antibacterial coatings: challenges and opportunities

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Abstract:
Antibacterial coatings are being increasingly used for preventing infections caused by bacterial pathogens. Recent progress in materials science, biomedical engineering and microbiology, it is now possible to design and realize various systems with antibacterial properties. However, several major challenges still need to be addressed towards the widespread use of such coatings in different environments. We review different types of antibacterial coatings, focusing on the remaining challenges and how these may be addressed. In particular, we discuss recent methods aimed at controlled drug release, conferring multiple functionalities and improving durability. Last but not least, we also discuss the potential use of such coatings for preventing infections caused by other pathogens such as viruses, an area which is currently of widespread interest due to the current global COVID-19 pandemic.