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Multi-Functional Supramolecular Metal-Binding Nanocomponents:Synthesis and Study of Thiacalix[4]arene Derivatives

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Multi-Functional Supramolecular Metal-Binding Nanocomponents: Synthesis and Study of Thiacalix[4]arene Derivatives

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Recently, the rise in bacterial resistance rendering both new and old antibiotics ineffective has driven researchers to explore supramolecular molecules as a novel means to target and treat infection. The current work of the Barnes Research Group focuses on combating antibiotic-resistant bacteria via the potent combinatorial treatment of antibiotics with metal ions. In this study, we aimed to investigate the metal-binding nanocomponent of a multi-functional polymeric platform, a thiacalix[4]arene ring. Specifically, a series of modifications along the upper-rim of the ring were constructed to optimize the metal-ion binding and solubility properties of the nanocomponent. This library of derivatives was synthesized in order to enhance the bactericidal activity of the drug-delivery platform, while reducing the system's cytotoxicity.