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This article elaborates the challenges and opportunities in the chemical synthesis of cyclic oligosaccharides, with particular relevance to those with 5 or less number of glycosyl units constituting the macrocycle. A sustained interest witnesses a heightened interest on the chemical synthesis small-ring cyclic oligosaccharides, primarily as a result of the inabilities to cyclize and secure the macrocyle retained with the stable $^4C_1$ conformation of individual sugar units. The stable $^4C_1$ conformation of individual sugar units constituting the small-ring macrocycles is important in order to create the macrocylic cavities with the preferred hydrophobicity-hydrophilicity attributes, suitable to interface with novel application possibilities. Due to manifold interest in general, chemical synthesis provides the necessary impetus to prepare tailor-made cyclic oligosaccharides, primarily as a result to benefit from their distinct functional properties.