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Chapter 9: This chapter discusses the design and manufacturing of functionally graded materials (FGMs) for biomedical applications. The authors present a detailed review of the various FGMs and their applications in medical implants. The impact of different additive-manufacturing techniques on the tribological characteristics of FGMs is evaluated, and the effectiveness of FGMs in improving the performance of implants is discussed. The chapter also highlights the challenges and opportunities in the development of FGMs for medical applications.

Chapter 10: This chapter presents a comparative study of a corrugated hip stem using finite element analysis (FEA) and experimental validation. The study aims to evaluate the biomechanical performance of the corrugated hip stem in terms of load transfer and stability. The results show that the corrugated hip stem provides better load transfer and stability compared to a standard hip stem.

Chapter 11: This chapter provides an overview of the applications of 3D printing in various sectors, including medical, engineering, agricultural, and other sectors. The chapter highlights the potential of 3D printing in creating custom-made medical implants, engineering components, agricultural tools, and other applications. The chapter also discusses the challenges and opportunities in the development of 3D-printed products for different sectors.