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## Metal-Polymer Sandwich Hybrid Stent integrated with PI based wireless pressure sensor

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### Abstract

This article presents a novel hybrid stent for efficient and stable pressure sensing during stent deployment that combines a metal-polymer sandwich structure with a wireless pressure sensor based on polyimide (PI). Bare metal stents (BMS) can decrease the sensitivity of pressure sensors due to their electrical and mechanical properties, while biodegradable stents have weak mechanical properties that hinder their insertion into blood vessels. The proposed hybrid stent overcomes the limitations of traditional stents by integrating the advantages of metal and biodegradable stents, providing adequate mechanical support and stiffness, and facilitating smooth insertion into blood vessels. The proposed hybrid stent with a wireless pressure sensor based on PI overcomes these limitations by offering superior thermal stability and flexibility compared to traditional SU-8 sensors. The PI-based wireless pressure sensor presents a novel and practical approach for improving the performance of wireless sensors, with potential for various medical applications. The proposed hybrid stent with a wireless pressure sensor presents a promising solution for practical applications in the medical field. Future studies can explore the potential of this technology for clinical use in monitoring intravascular pressure during stent deployment.

**Keywords:** Hybrid stent, Wireless pressure sensor, Metal-polymer sandwich structure, Polyimide

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