

# **MATERIALS ENGINEERING SEMINAR**

**“Smart Scleral Lenses for Continuous Monitoring of Intraocular Pressure”**

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## **ABSTRACT**

Smart scleral lenses are attracting more academic and industrial interest because of the developed manufacturing technologies and wide application range for customers with dry eye syndrome, ocular disease or who have undergone corneal surgery. However, the theoretical suspicion of elevated intraocular pressure (IOP) during scleral lens wear, which may cause glaucoma and even vision loss, leads to the requirement for continuous IOP monitoring while wearing scleral lenses, which is not achievable with traditional standard IOP measurement methods. IOP sensing based on contact lenses shows great potential to be combined with scleral lenses to deal with the issue due to the convenience and the possibility of continuous monitoring. In this paper, the background and current research results of IOP assessment for scleral lens wear are introduced, and the soft contact lens-based IOP monitoring strategies under different mechanisms, as well as the comparison of their materials, fabrication methods, and sensing properties are reviewed. Subsequently, in view of those factors, the potential application possibilities, challenges, and implications of the smart scleral lens-based continuous IOP monitoring devices are discussed and summarized.

**<https://purdue-edu.zoom.us/my/chihwanlee>**



School of Materials Engineering

**WEDNESDAY,  
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12:30PM**

**ARMS 1028  
OR  
Zoom**