

Abstract Submitted  
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**Fabrication of One Dimensional Photonic Crystal By Sputtering and Sol Gel Methods**<sup>1</sup> NICHOLAS BORUCKI, TOM ODER, Youngstown State University —  $\text{TiO}_2$  and  $\text{SiO}_2$  are two oxides that offer one of the largest refractive index differences, which could be tailored for various optical device applications. A one dimensional photonic crystal (1-D PC) within the UV-visible spectrum made of thin multilayer films of  $\text{TiO}_2$  and  $\text{SiO}_2$  was fabricated. Two methods of deposition were compared: magnetron sputtering and sol-gel spin coating. The photonic band gap (PBG) was theoretically and experimentally determined by controlling the periodic spacing of the constituent materials. PBG's were observed between 200–350 nm in both samples. Furthermore, steps towards making a PC with 2-D and omnidirectional band gaps were investigated. Further details of the fabrication steps as well as the specific results obtained will be presented.

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Tom Oder  
Youngstown State University

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