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Surface charge effects on the plasmonic band gap of metallodielectric gratings IAN FOTI-LANDIS[1], PAUL WHITE[2], JENNIFER STEELE[3], Trinity University — Surface plasmon resonances of both metal nanoparticles and metal surfaces are highly sensitive to changes in their dielectric environment. The changes in surface plasmon resonance due to target molecules binding to the metal have been found to be caused by both a local change in dielectric environment as well as changes in the surface chemistry of the metal. The majority of investigations of these competing effects have primarily been limited to the localized surface plasmon resonances of metal nanoparticles. Here, the effects of surface chemistry on surface plasmons will be investigated using metallodielectric gratings. This periodic geometry supports traveling surface plasmon waves that show a plasmonic band gap in the dispersion relationship when two counterpropagating waves are simultaneously excited. The band gap energy changes in response to chemical functionalzation, giving unique information on how the surface chemistry affects the surface plasmon resonance. This work focuses on the effect of charged species as a function of pH.

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