

Abstract Submitted
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3D topological plasma photonic crystal with surface plasmon and Fano-resonance modes BENJAMIN WANG, JESSE RODRIGUEZ, MARK CAPPELLI, Stanford University — A 3D woodpile structure tunable plasma photonic crystal is designed, simulated, and experimentally characterized over the S-X band of the electromagnetic spectrum. The crystal has individually tunable elements, allowing for dynamically reconfigurable operating modes within the crystal. The photonic crystal's reconfigurability, achieved through individual discharge control of the properties of the woodpile plasma columns, allows for tuning of the interactions between both the Bragg and localized surface plasmon modes which dominate the spectrum at lower frequencies. Experiments and simulations show coupling of Bragg and surface plasmon modes through Fano resonances interactions between dimensional layers. Interesting topological effects of the 3D crystal are investigated.

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