

Abstract Submitted
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Active Control of Surface Plasmonics with Ferroelectricity¹ XI-AOYING XU, NAHLA A. ABU-HATAB, Oak Ridge National Lab, MARIA CLAUDIA TROPAREVSKY, The Univ. Tennessee; Oak Ridge National Lab, QUANSHI LI, The Univ. Tennessee, LIFENG YIN, Oak Ridge National Lab, KATYAYANI SEAL, The Univ. Tennessee; Oak Ridge National Lab, ZHILI ZHANG, The Univ. Tennessee, BAOHUA GU, Oak Ridge National Lab, ZHENYU ZHANG, JIAN SHEN, The Univ. Tennessee; Oak Ridge National Lab, OAK RIDGE NATIONAL LAB TEAM, THE UNIV. TENNESSEE TEAM — Surface plasmons occur when the conduction electrons at a metal/dielectric interface resonantly interact with external electromagnetic fields, which has been limited to static (passive) structures. However, the most exciting applications of plasmonic phenomena occur in the visible spectral range with active control of the plasmonic response. In this work, we studied the fundamental mechanisms leading to active control of the plasmonic response in the visible range using ferroelectric materials. The great tunability of polarity and dielectric constant at the interface between LuFe₂O₄ and Au particles offers effective control of surface plasmonics, which could be easily monitored Surface Enhanced Raman Scattering.

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