

Abstract Submitted
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Slowing light in diatomic nanoshelled plasmonic chains: a hybridization of bands model¹ CHI WAI LING, MINGJIE ZHENG, KIN WAH YU, The Chinese University of Hong Kong — Coupled plasmon modes have been studied theoretically in periodic diatomic chains consist of thickly shelled and thinly shelled metal nanoparticles embedded alternatively in a dielectric host. We calculate the dispersion relation of the diatomic chains and show that we can tune the shelled particle band into the unshelled particle band by varying the permittivity contrast and/or the core-shell radius ratio. Furthermore, hybridization of the thickly shelled and the thinly shelled particle band occurs, this offers a precise control of the group velocity of coupled plasmon modes, which is useful in plasmonic circuit, optical switches, solar cell, etc. The group velocity of plasmon near the hybridization point can be slowed down to match the velocity of sound, so that a horizontal process via the absorption of phonon can be possible.

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