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**Plasmonic properties of Nanorod Dimers** BRITAIN WILLINGHAM, DANIEL BRANDL, PETER NORDLANDER, Rice University — Using the plasmon hybridization and the FDTD methods, we investigate the plasmonic properties of nanorod dimers as a function of inter-particle separation and relative nanorod orientation. We show that the plasmonic structure of the dimer consists of bonding and anti-bonding combinations of individual nanorod plasmons localized on each particle. For short dimer separations, the plasmons consist of strongly hybridized individual nanorod plasmons of all multipolar orders. The bonding dipolar dimer plasmon displays a strong red shift with decreasing dimer separation and provides large electric field enhancements across the dimer junction.

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