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**Switchable End-Linking of Gold Nanorods Induced by a Computationally Designed, Metal-Binding Peptide** ROBERT C. FERRIER, MATTHEW EIBLING, University of Pennsylvania, CHRISTOPHER MACDERMAID, Temple University, CHRISTOPHER LANCI, JEFFERY G. SAVEN, RUSSELL J. COMPOSTO, University of Pennsylvania — Gold nanorods (AuNRs) possess unique optical properties that depend on the local orientation and separation of the individual rods. Previously, our group has explored the 'permanent' end-linking of AuNRs with alkane dithiols. The present work investigates the switchable end-linking of AuNRs via a computationally designed peptide. AuNRs are end-functionalized with a peptide designed *in silico* to bind a specific metal-ion. AuNRs end-to-end assemble when this metal-ion is present in solution above a particular concentration. The effect of metal-ion concentration on AuNR assembly is probed via UV/Visible spectroscopy and electron microscopy. A chelating agent is added to disassemble the AuNRs, returning the AuNRs to their original, unlinked, state. AuNRs can then be assembled again by adding more metal-ions, thereby allowing the solution optical properties to be switched between two states.

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