Bio-assembled and lithographic nanostructures incorporating metal and semiconductor nanocrystals exhibit strong optical absorption associated with exciton and plasmon resonances [1,2]. When a system includes chiral molecules, an interaction between excitons and plasmons is able to alter and enhance circular dichroism (CD) of chiral molecular dipoles [3,4]. Especially strong enhancement factors for the molecular CD signals can be achieved using plasmonic hot spots [4,5]. Strong CD signals can also appear in purely plasmonic systems with a chiral geometry and a strong particle-particle interaction [6,7,8]. In our theories, we model electromagnetic interactions between chiral and achiral building blocks using both classical and quantum formalisms. The theory predicts several novel mechanisms to transfer and induce circular dichroism in the visible wavelength region using plasmonic and excitonic nanostructures. The CD mechanisms described in our studies come from: The plasmon-molecule Coulomb interaction [3], plasmonic hot-spot enhancement [4,5], a long-range electromagnetic interaction in micron-scale nanostructures with a chiral geometry, plasmonic and excitonic resonances in nanocrystals with chiral shapes [9], and strong plasmon-plasmon interactions in helical and other chiral assemblies [6,7,8]. Potential applications of the chiral nano-assemblies are in bio-sensors and chiral chemistry.