A vital process in all living systems, self-replication has the potential to revolutionize industry. We propose a scheme for self-replicating colloid dimers. We use two kinds of hard-sphere colloids with switchable, complimentary attractive sites and permanent linking sites. Using a kinetic Monte Carlo algorithm we show that one can achieve exponential growth with no erroneous bonds. Continuing growth requires periodically adding energy by deactivating the complimentary attractive sites on the monomers. We show that the exponential growth rate is a non-monotonic function of intervals between energy inputs.

**Figure:** (left) (a) Scheme of a self-replicating system composed of switching colloids with asymmetric interactions: the monomers’ and templates’ structure and how their “functionalized” sites interact. Y and Y’ form permanent links, while z and z’ attract one another when the potential is ON, but not otherwise. (b) 2D schematic representation of the self-replication process. The periodic energy pulse is fully described by the variables \( \tau \) and \( \tau_{on} / \tau \).