Entangled fractal clusters forming the lattice animals in irreversible DLCA binary systems ZAKIYA SHIREEN, SUJIN BABU, Indian Institute of Technology Delhi, New Delhi, India — Irreversible DLCA of binary spheres was simulated by modifying the Brownian Cluster Dynamics. Volume fraction of randomly distributed $N$ spheres in a box of size $L$ is given by $\Phi_{\text{tot}} = \frac{\pi}{6} N_{\text{tot}} / L^3$. $N_A$ and $N_B$ number of spheres of same size are defined as species $A$ and $B$. Intra-species form irreversible bonds, while inter-species interaction is through hard core repulsions. We kept $N_B \geq N_A$, and observed bigel for certain fraction of $A$ species. By tuning the $\Phi_{\text{tot}}$ and fraction of $A$ and $B$ species we were able to regulate the size of the cage and designed clusters of a specific size. We found that the accessible volume of the system increases when compared to the monomeric case, which means that species $A$ is aggregating inside the cage created by $B$. Unlike monomeric DLCA we observe that for moderate $\Phi_{\text{tot}}$ both the species undergo a transition from lattice animal(fractal dimension,$d_f = 2.0$) to the percolation region($d_f = 2.5$). We found that $A$ clusters are stuck inside the $B$ percolating cluster and always have a fractal dimension of 2, thus having 2 characteristic length scale for binary system. Also, diffusion of one species are hindered by the presence of the other species forming cages.