

Supporting Information

Intracellular Delivery of β -galactosidase Enzyme using Arginase responsive Dextran sulphate/Poly-L-arginine capsule for Lysosomal Storage Disorder

Meenakshi Gupta^{a,b}, Himanshu Pandey^b, Sri Sivakumar^{c,}*

^a Institute of Pharmacy, Chhatrapati Shahu Ji Maharaj University, Kanpur, Uttar Pradesh-208024, India.

^b Department of Pharmaceutical Sciences, Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad, Uttar Pradesh -211007, India

^c Department of Chemical Engineering, Material Science programme, Centre for Nanoscience and Soft Nanotechnology, Centre for Environmental Science and Engineering, Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh-208016, India.

* Corresponding author, email address: srisiva@iitk.ac.in. Tel: +91-512-2597697. Fax: 91-5122590104.

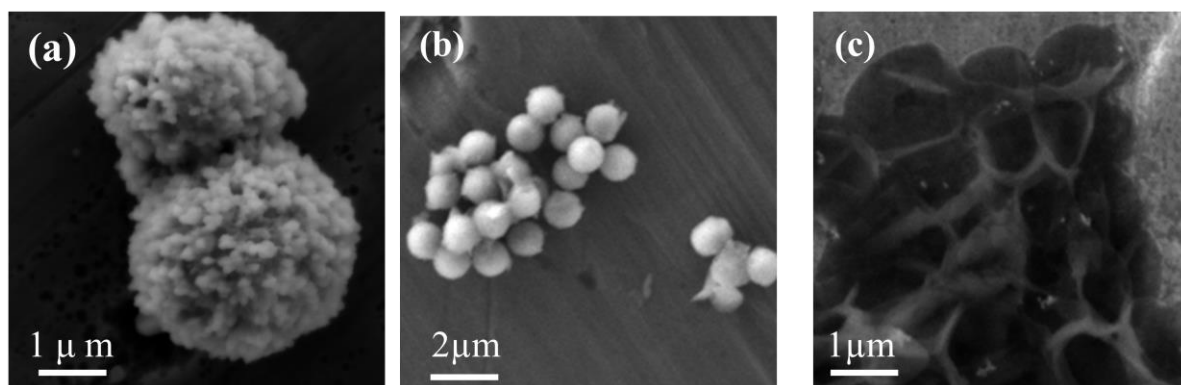


Figure S1. (a)SEM image of calcium carbonate template, (b) SEM image of APTES functionalized silica template and (c) SEM image of PSS/PAH capsules

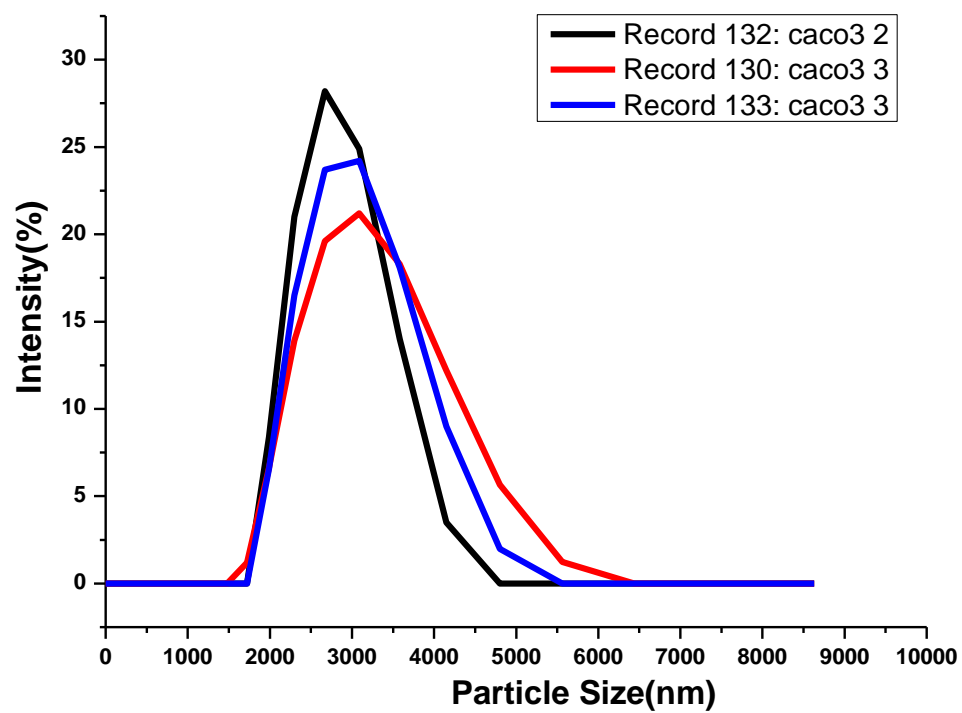


Figure S2. Particle Size of calcium carbonate template by dynamic light scattering

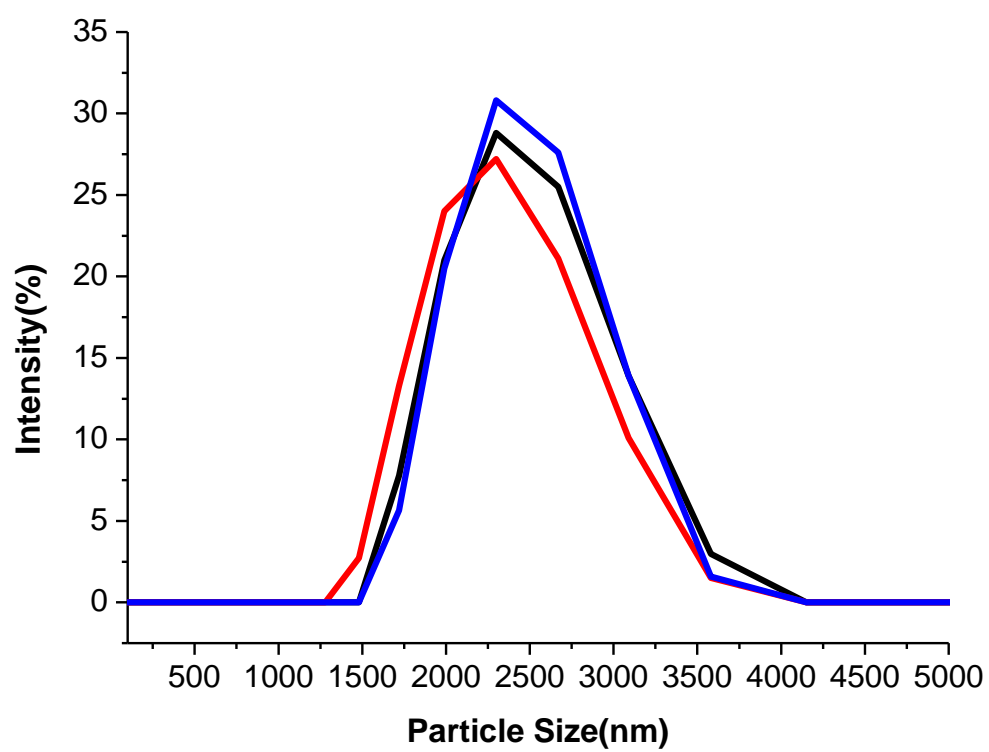
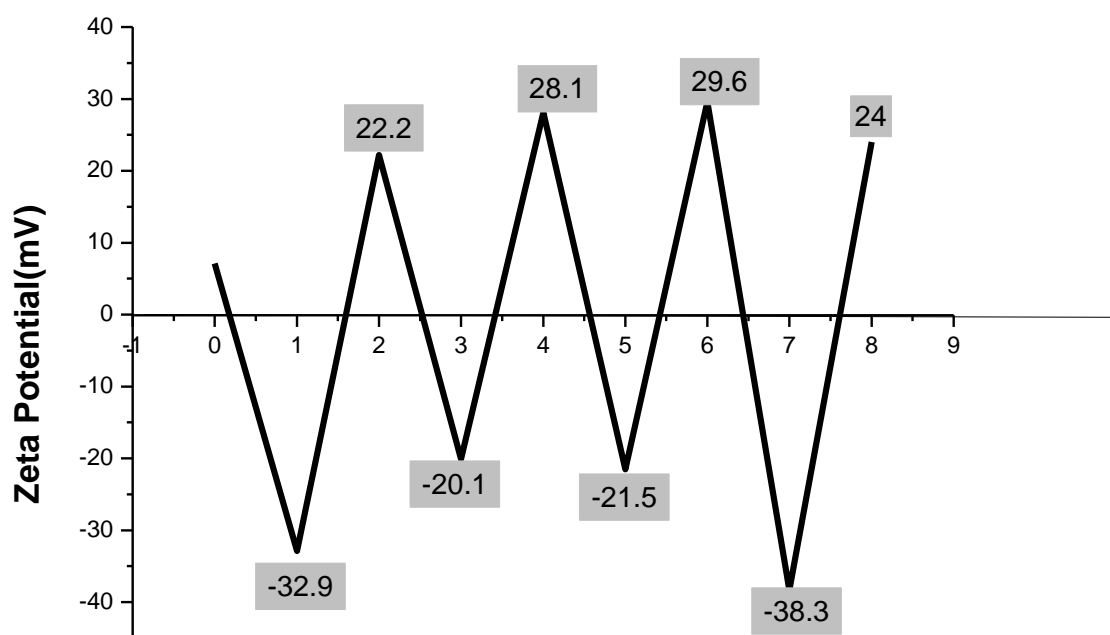


Figure S3. Particle Size of DS/PA capsules by dynamic light scattering



Alternating Layers of Positive & Negative charged Polymer

Figure S4. Illustration of change in zeta potential of DS/PA capsules while layer by layer assembly in water showing alternating positive and negative charges. Layer 1st, 3rd, 5th and 7th: negatively charge (dextran sulphate). Layer 2nd, 4th, 6th and 8th: positively charge (poly-l-arginine) applied on β -gal coated calcium carbonate template.

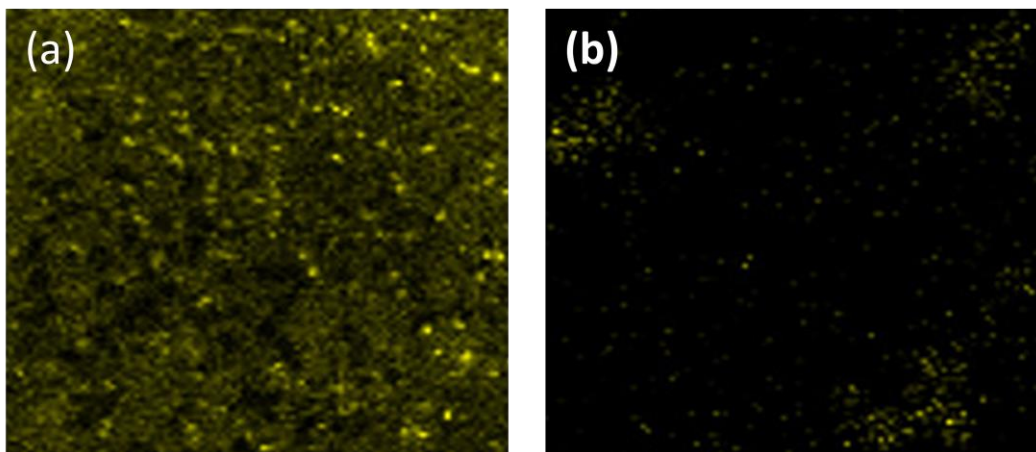


Figure S5: β -gal enzyme–substrate (ONPG) reaction inside the capsules for confirmation of β -gal enzyme encapsulation inside (a) DS/PA capsules and (b) PSS/PAH capsules

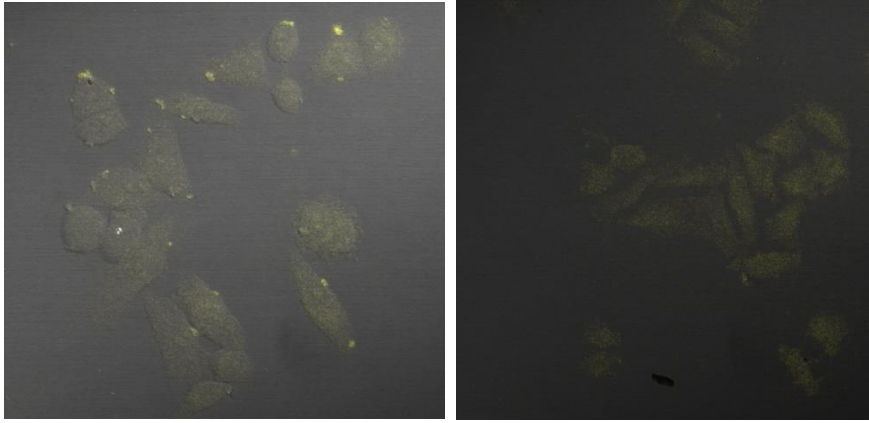


Figure S6: Confocal microscopy images of β -gal enzyme release from β -gal DS/PA capsule in HeLa cells at 4h time point

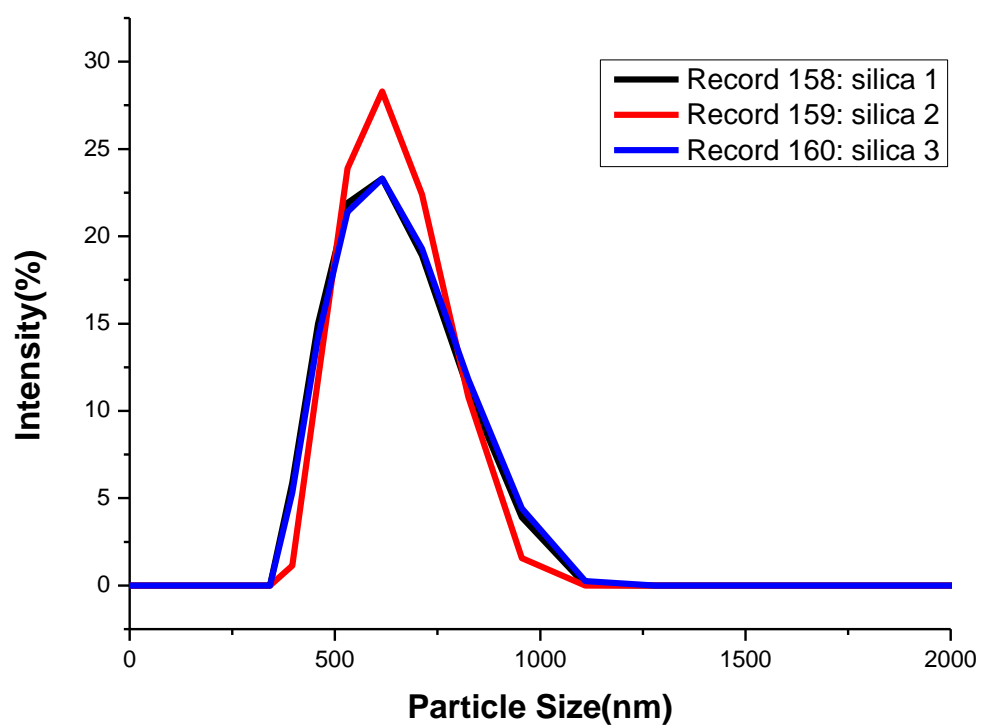


Figure S7: Particle size of APTES functionalized silica particles by dynamic light scattering

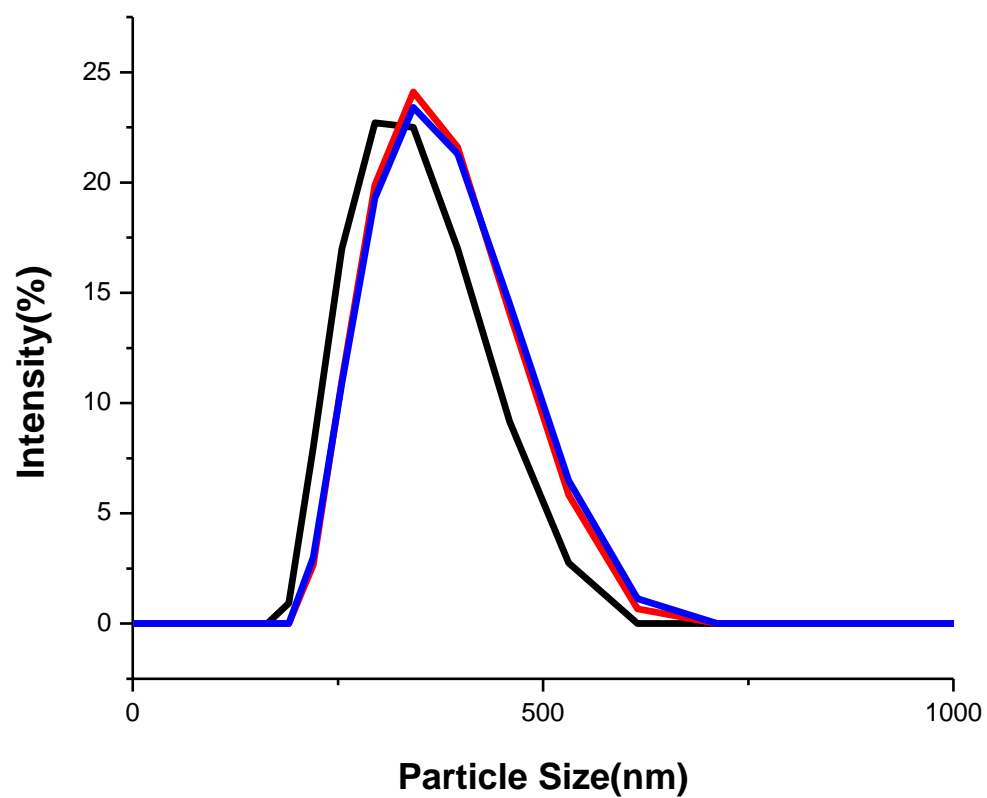


Figure S8: Particle Size of PSS/PAH LBL capsules by Dynamic Light Scattering