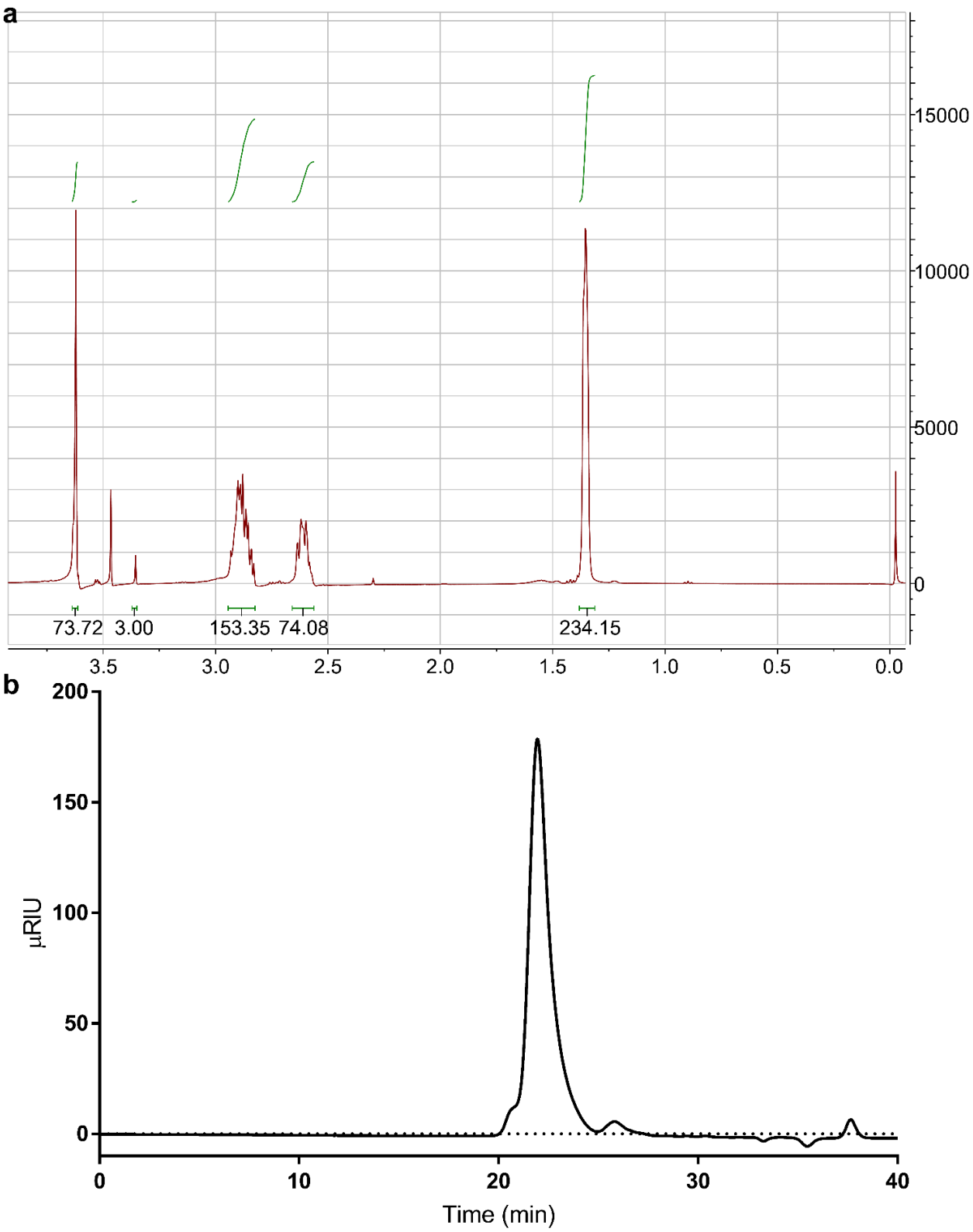
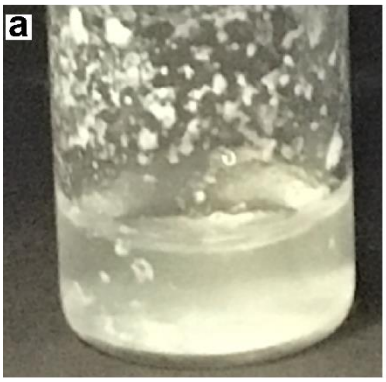
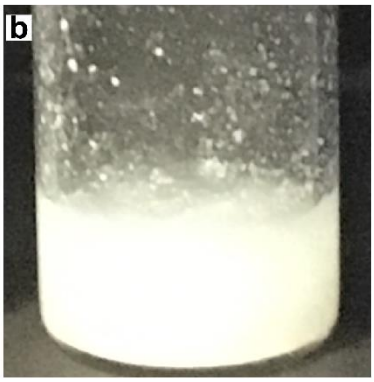
Electronic Supplementary Material (ESI) for Nanoscale.


Supplemental Figure 1. Representative NMR and GPC graphs of $PEG_{17}$-*bl*-$PPS_{75}$-Thiol.

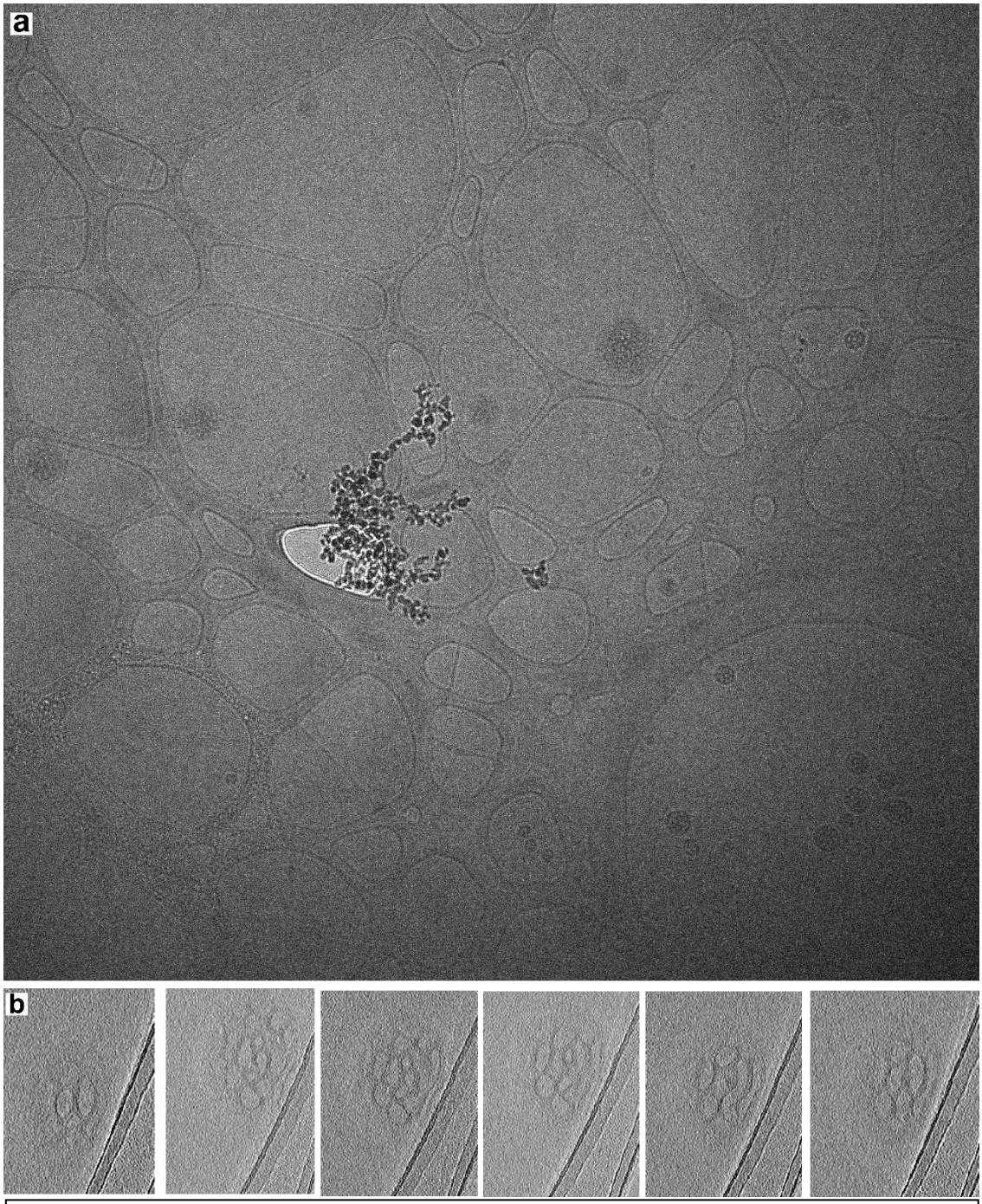


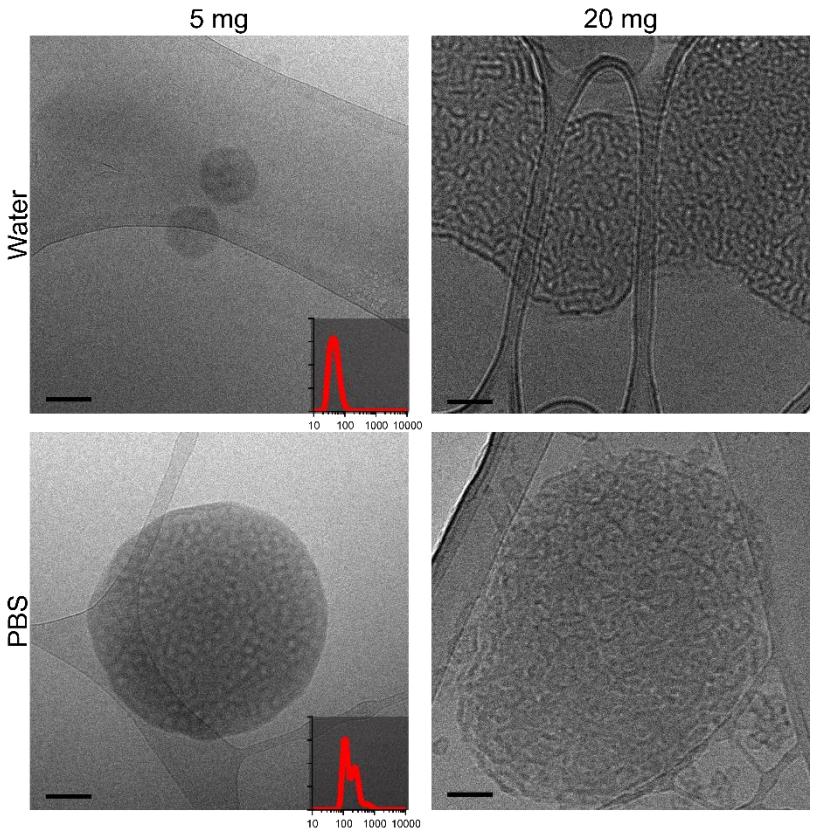

**c**

| Aqueous Solvent | Formation Process: Thin Film | Co-Solvent Dispersion | Flash Nanoprecipitation |
|---|---|---|---|
| Water | ✗ | ✓ | ✓ |
| 1xPBS | ✗ | ✗ | ✓ |

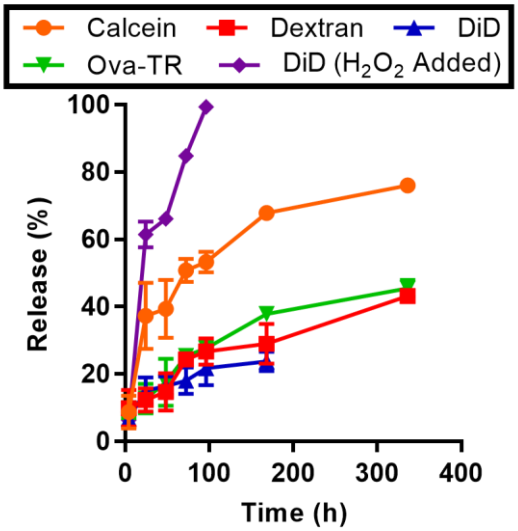
Supplemental Figure 2. BCN formation by alternative fabrication methods. BCN formulations formed by (a) thin film rehydration in water or (b) co-solvent dispersion in 1xPBS demonstrated extensive aggregation and precipitation. (c) Table of successful, stable, aggregate-free formation of BCNs by aqueous solvent and formation process.



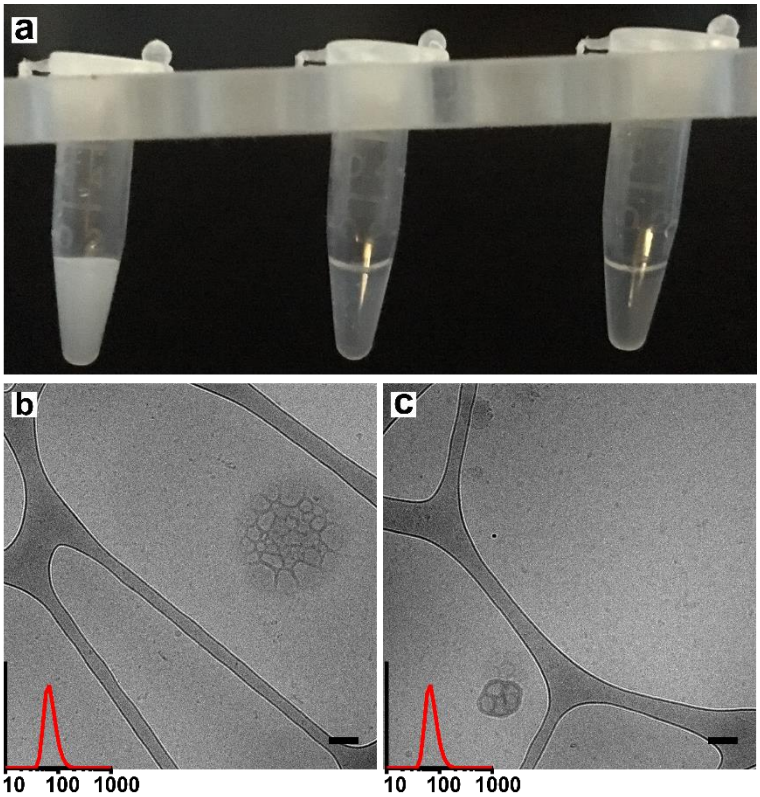

Supplemental Figure 3. CryoTEM images of BCNs. (a) Low magnification image of BCNs formed at 10 mg/mL concentration in water by FNP. (b) Selected frames of cryoTEM tomogram of a BCN, displaying aqueous channels within the nanostructure.



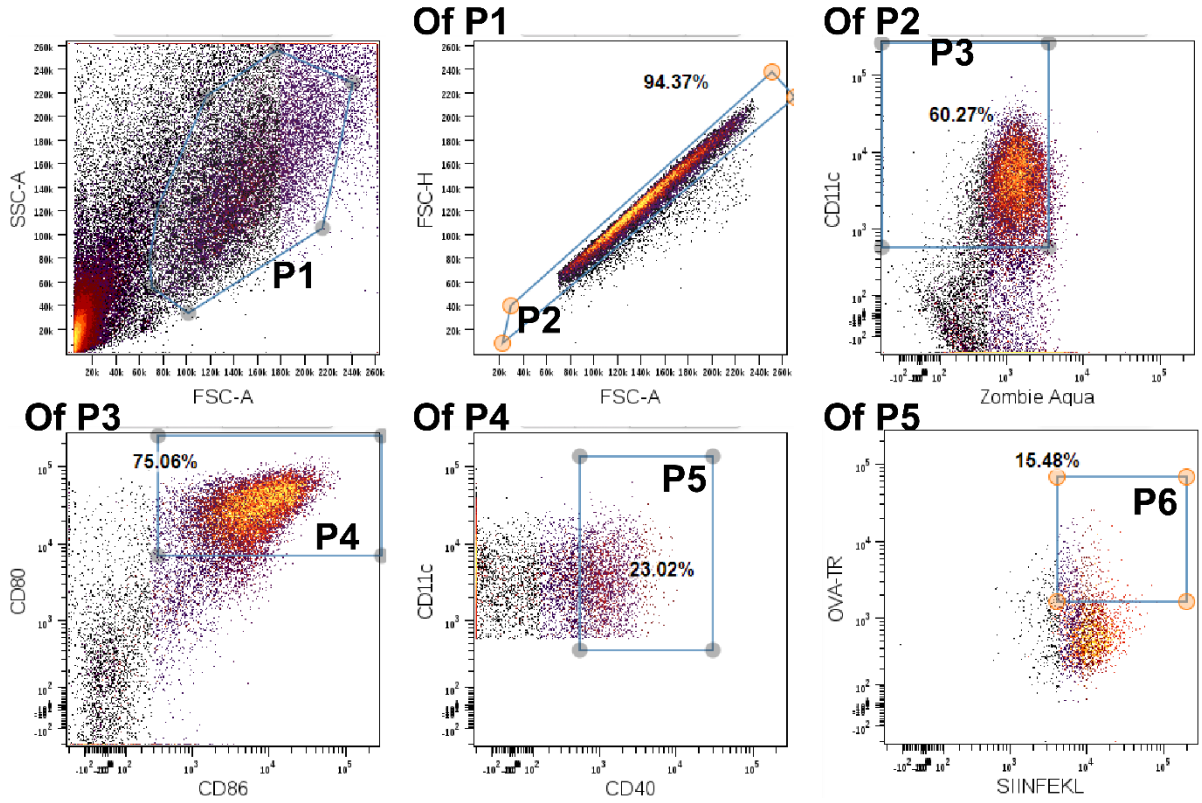

Supplemental Figure 4. Representative cryoTEM images of BCNs formed at different polymer concentrations by FNP using water or PBS as the aqueous solvent. DLS size distribution data is overlaid when applicable, the 20 mg samples formed structures unsuitable for DLS analysis. Scale bars in all images are equivalent and represent 100 nm.




Supplemental Figure 5. Release curves of hydrophilic and hydrophobic cargo for samples shown in Fig. 3b, with additional timepoints at 168 h (all excluding H2O2-treated DiD BCNs) and 336 h (calcein, dextran, and Ova-TR loaded BCNs). For all points, n = 3 error bars represent SD.




Supplemental Figure 6. $H_2O_2$ degradation of BCN formulations. (a) BCN formulations formed by FNP in water before (left), after 2 days (middle), and after 4 days (right) exposure to 100 μM $H_2O_2$. CryoTEM images of BCN samples exposed to 100 μM $H_2O_2$ for (b) 2 days and (c) 4 days. Scale bars in (b) and (c) represent 100 nm.




Supplemental Figure 7. Example gating for flow cytometry data displayed in Fig. 5. BMDCs were gated on FSC and SSC to exclude debris and FSC A vs H to exclude doublets. DCs were selected in P3, then were gated for activation in P4 and P5 before being gated for SIINFEKL display on MHC I and Texas red – ovalbumin uptake within cells.