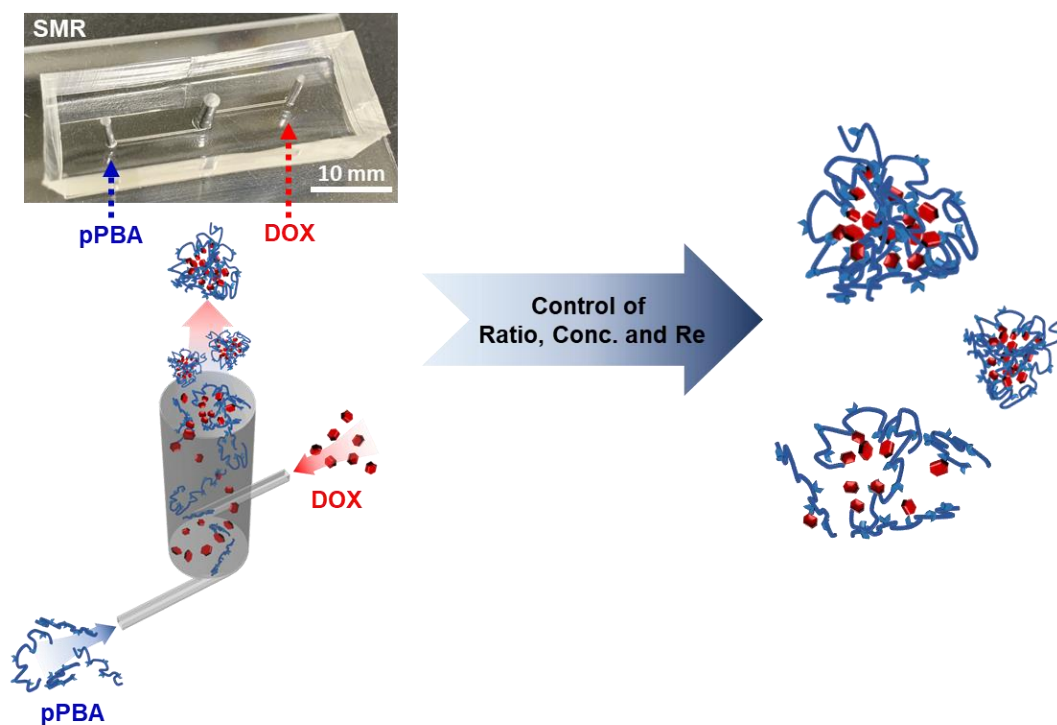


## Supporting Information

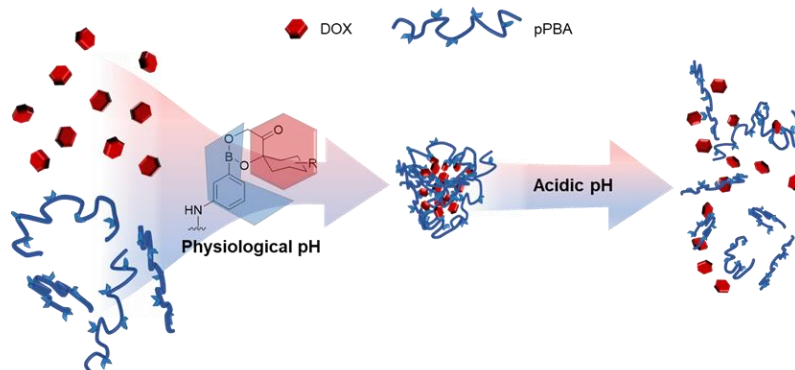
### **Polymeric Nanoparticles Controlled by On-chip Self-Assembly Enhance Cancer Treatment Effectiveness**

*Sungjin Jung, Junseok Lee, Junha Lim, Jeeyeon Suh, Taeyoung Kim, Jungho Ahn, Won Jong Kim\* and YongTae Kim\**

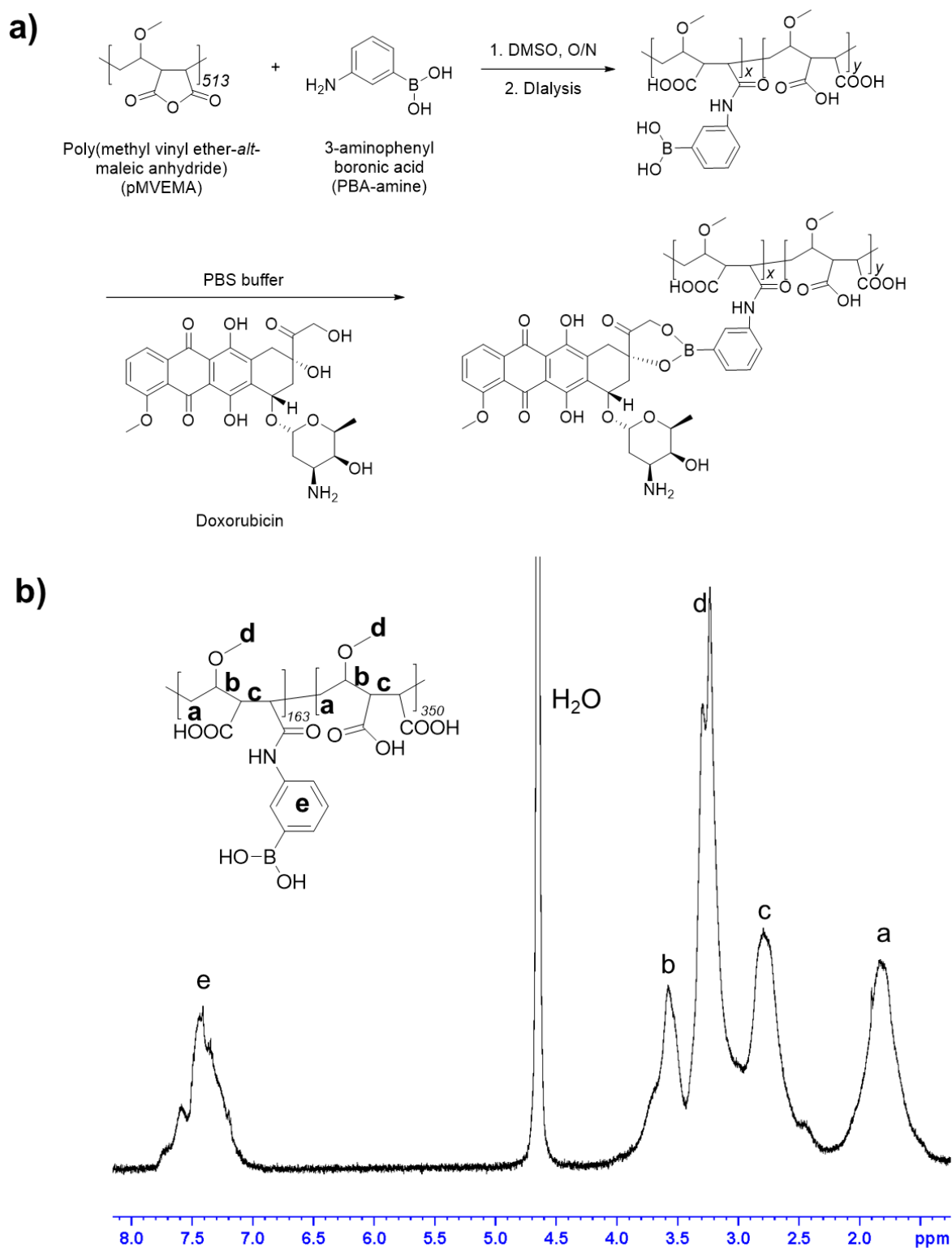
a)



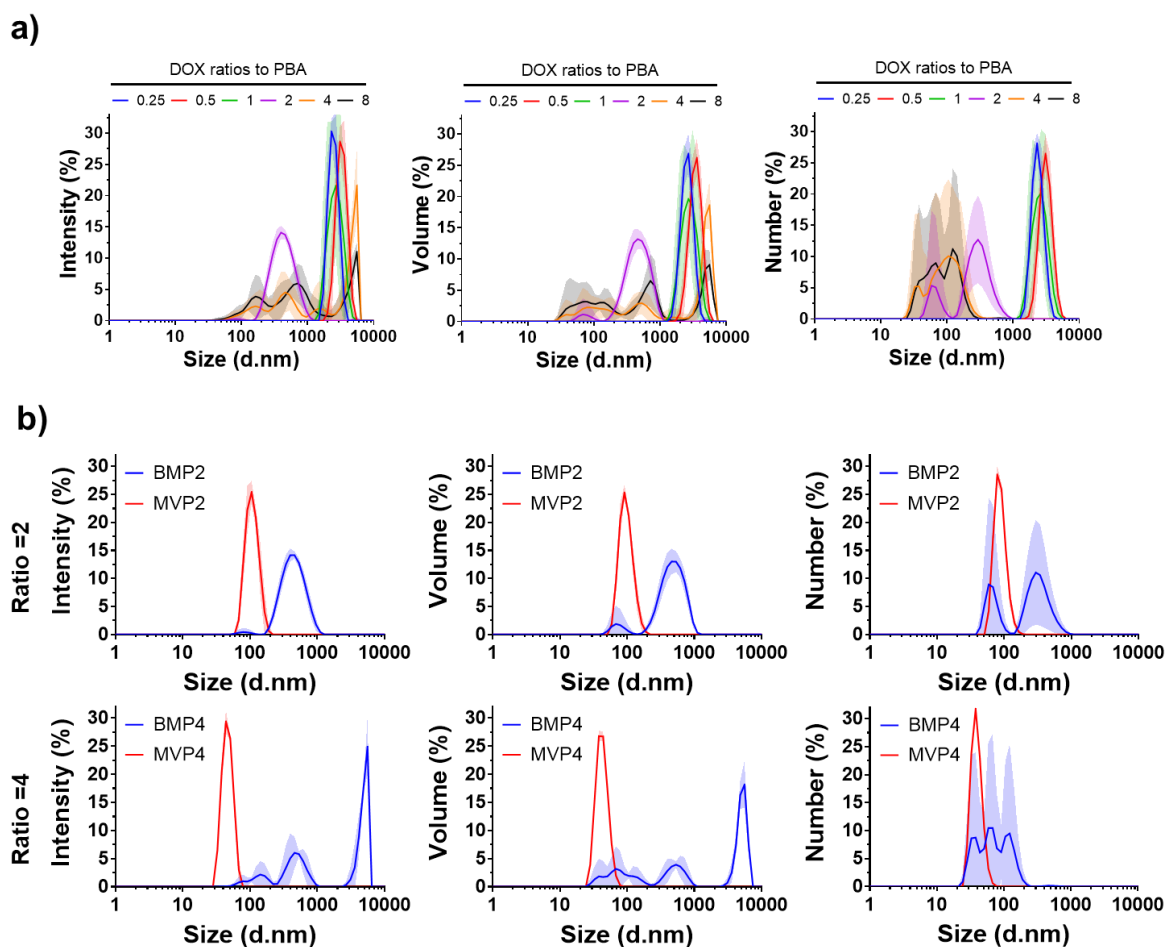
b)



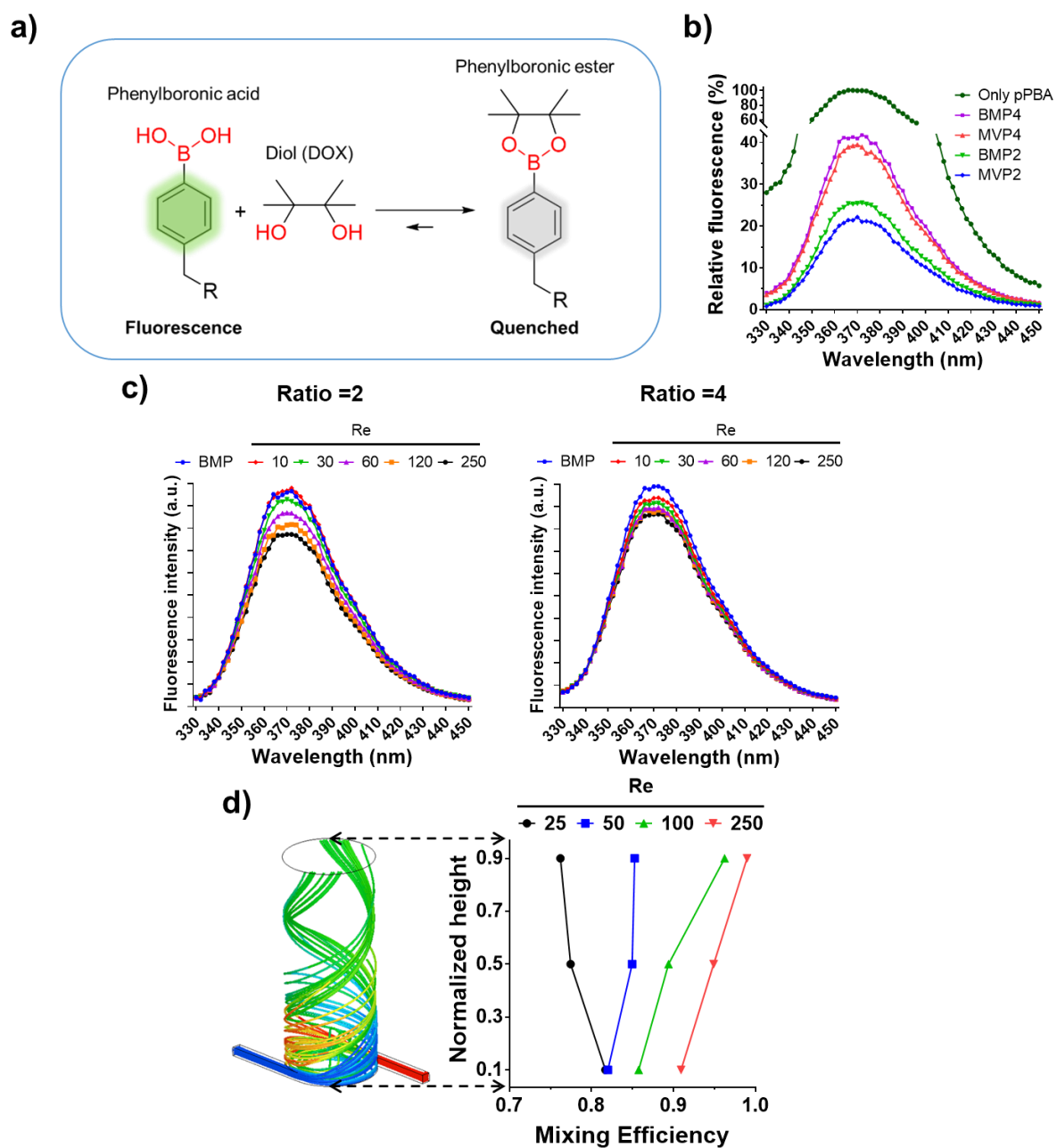
**Scheme S1.** Schematic illustration of (a) Formation of NPs via SMR chip. pPBA and DOX solution were pumped into two inlets, and the synthesized NPs were pumped out via outlet. Scale bar = 10 mm. (b) chemical interaction for NP formation and dissociation depending on pH.



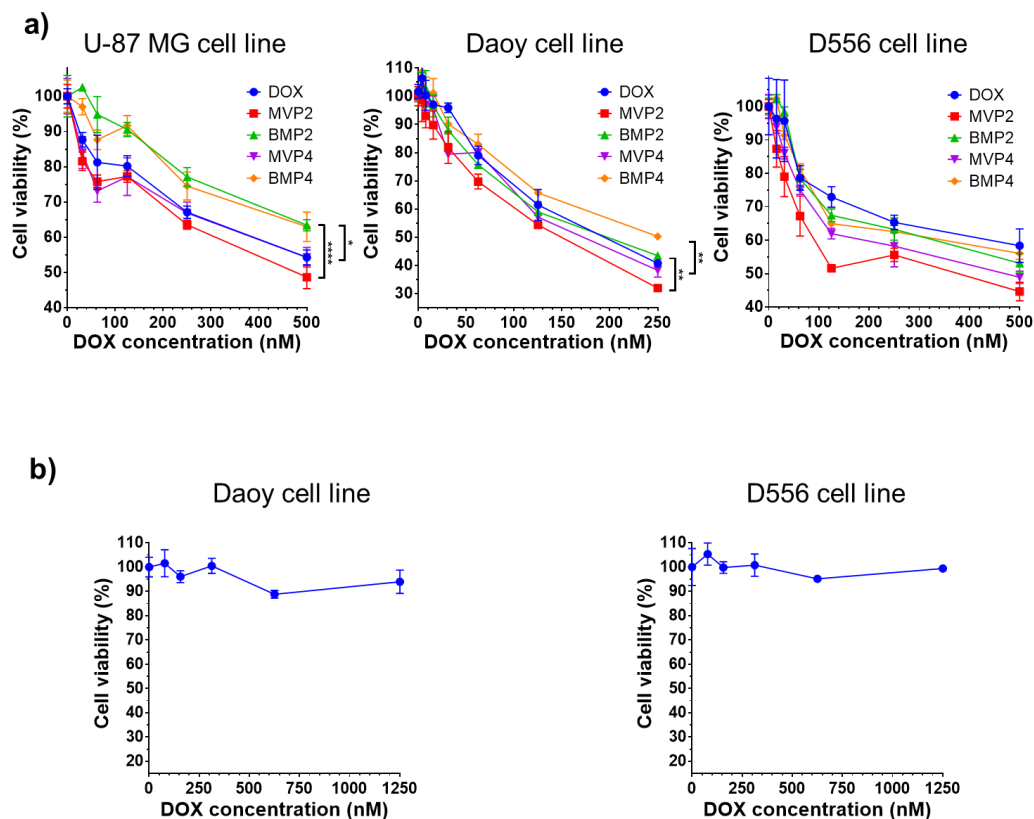
**Figure S1.** (a) Synthesis scheme of pPBA and NPs. Diol of DOX can interact with PBA of pPBA. (b)  $^1\text{H}$  NMR spectra of pPBA.



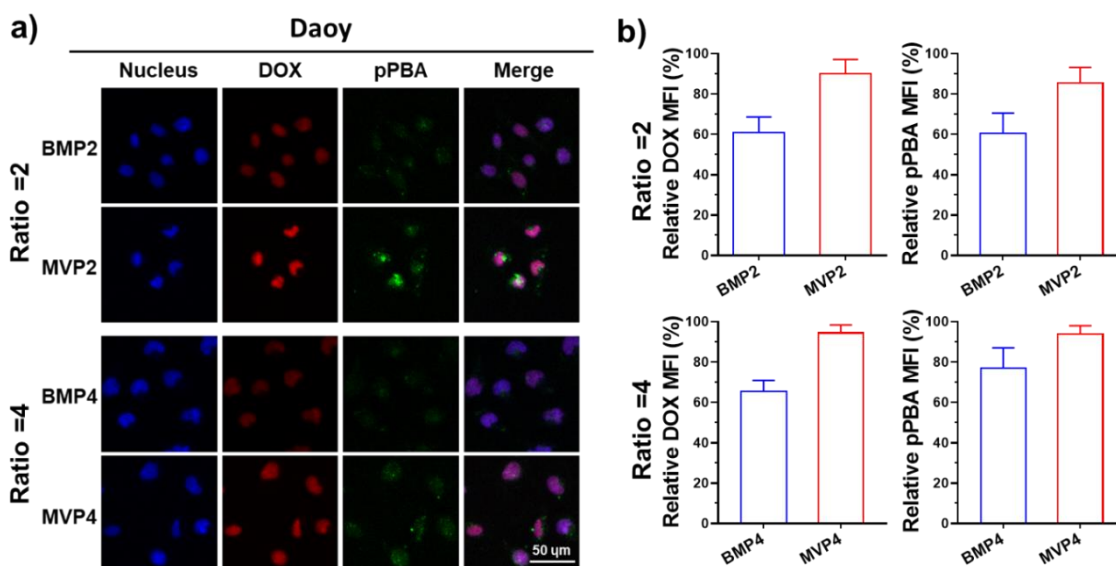
**Figure S2.** NP formation at various ratios via (a) BM method and (b) MV method with Re 250, and then the NPs were analyzed with DLS ( $n = 3$ ).



**Figure S3.** (a) Schematic illustration of PBA fluorescence quenching. (b) Quenching of PBA fluorescence of pPBA, BMPs and MVPs at Re 250 and (c) Re-dependency of MVP2 and MVP4. (d) CFD results for mixing efficiency of SMR at each height depending on Re.



**Figure S4.** (a) Cytotoxicity of DOX and the NPs evaluated by MTT assays after 48 h incubation. (b) Cytotoxicity of pPBA at each cell line after 48 h incubation. Negligible cytotoxicity of pPBA was observed.



**Figure S5.** (a) Confocal fluorescence images of Daoy cell showing cellular uptake of NPs for 4 h. Blue, red, and green images represent nucleus, DOX, and pPBA labelled with

fluorescence dye, respectively. Scale bar is 50  $\mu\text{m}$ . (b) Relative DOX and pPBA mean fluorescence intensities of (a). Each MFI was normalized maximum intensity.