**Electronic Supplementary Information**

# Role of weakly polarized nanoparticles in electroporation

Jeong Ah Kim[a] and Won Gu Lee[b]*

[a] *School of Chemical & Biological Engineering, Seoul National University, 599 Gwanangno, Gwanak-gu, Seoul 151-742, Republic of Korea*

[b] *Department of Mechanical Engineering, College of Engineering, Kyung Hee University 1 Seochon-dong, Giheung-gu, Yongin-si, Gyeonggi-do 446-701, Republic of Korea*

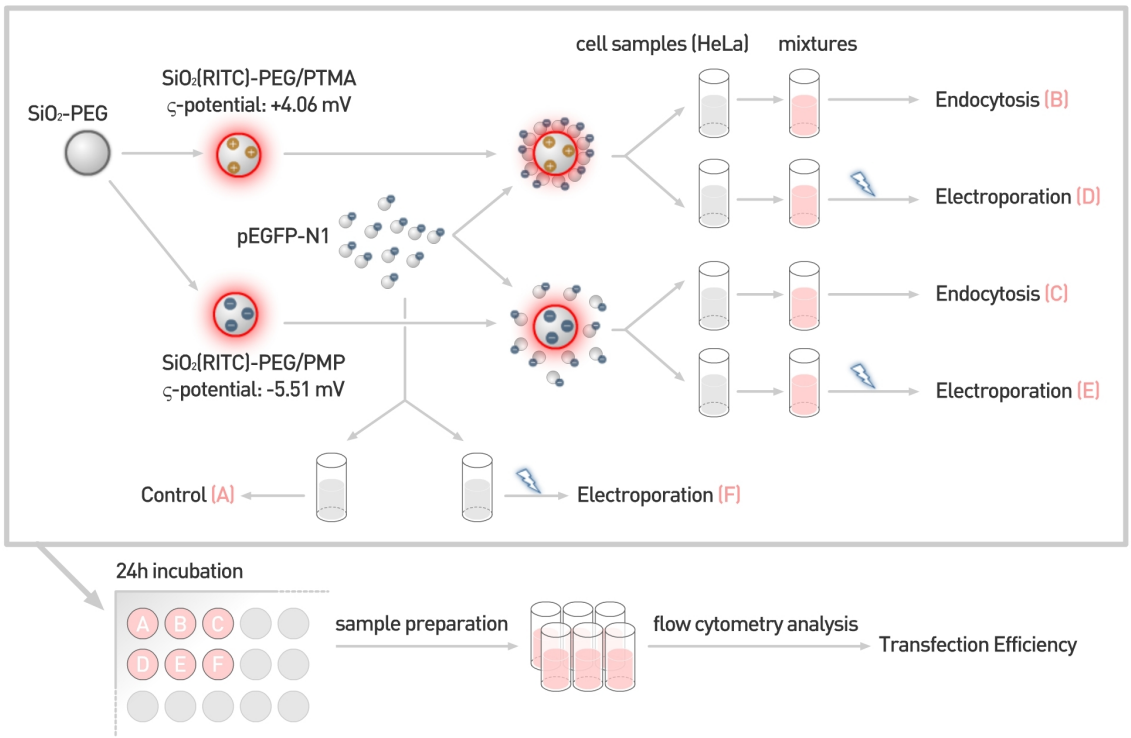


**Figure S1. Illustrated schematic for experimental procedures using nanoparticles**

Experiments for *in vitro* investigation for the effect of oppositely charged SiNPs on the TE are sequentially conducted: (i) preparation of oppositely charged fluorescent SiNPs, (ii) preparation of biological samples, (iii) sample mixing and loading for electroporation and endocytosis, (iv) electroporation, (v) sample preparation after post-incubation (~24 hrs), and (vi) the flow cytometry analysis.

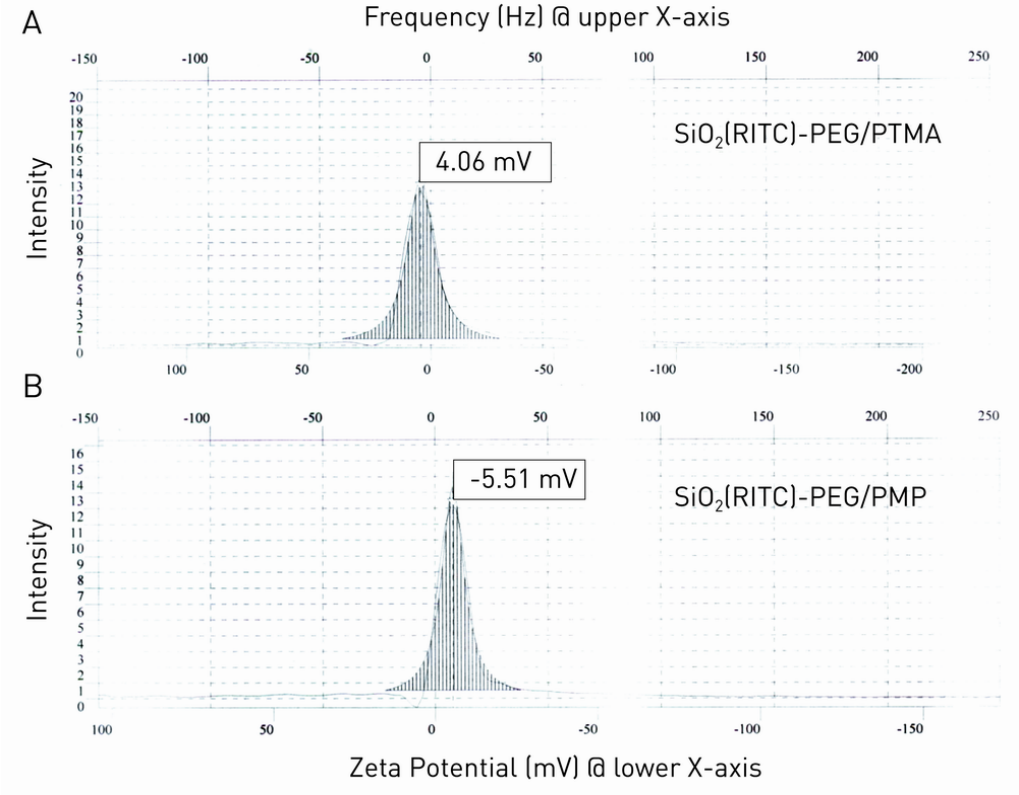


**Figure S2. Measurement of zeta potential**

The distributions of mobility and the zeta potential of oppositely charged $SiO_2$(RITC)-PEG nanoparticles, measured using the Smoluchowski equation: (A) for SiNPs(RITC)-PEG/PTMA(+), the mobility and the zeta potential are measured to be $2.892\times10^{-5}$ $cm^2$ $V^{-1}$ and +4.06 mV, (B) for SiNPs(RITC)-PEG/PMP(-), $-3.893\times10^{-5}$ $cm^2$ $V^{-1}$ and -5.51 mV, respectively.