Supporting information for

A Selective and Purification-free Strategy for Labeling Adherent Cell with Inorganic Nanoparticles

Yu Gao[a,b], Jing Lim[a], David Yeo[a], Shanshan Liao[a], Malin Lans[a], Yaqi Wang[c], Swee-Hin Teoh[a], Bee Tin Goh[d], Chenjie Xu[a,e*]

[a] School of Chemical and Biomedical Engineering, Nanyang Technological University, 70 Nanyang Drive, Singapore 637457

[b] Key Laboratory for Organic Electronics & Information Displays (KLOEID), Institute of Advanced Materials (IAM), National Synergistic Innovation Center for Advanced Materials (SICAM), Nanjing University of Posts & Telecommunications, 9 Wenyuan Road, Nanjing 210023, China

[c] Hybrid Silica Technologies, Cambridge, MA USA 02139

[d] National Dental Centre of Singapore, Second Hospital Avenue, Singapore 168938

[e] NTU-Northwestern Institute of Nanomedicine, Nanyang Technological University, 50 Nanyang Avenue, Singapore 639798

* Corresponding to cjxu@ntu.edu.sg

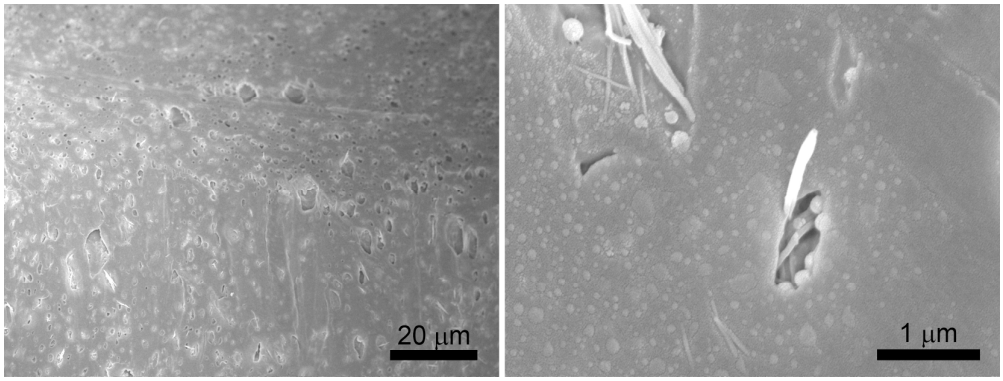

Figure S1. SEM images of the cross-section of SiNP-PCL nanocomposite film with different resolutions

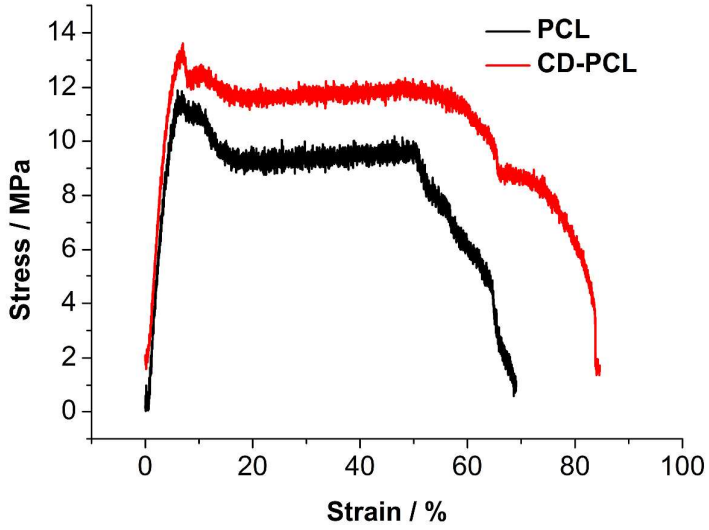

Figure S2. Stress-strain curves of PCL and SiNP-PCL nanocomposite films

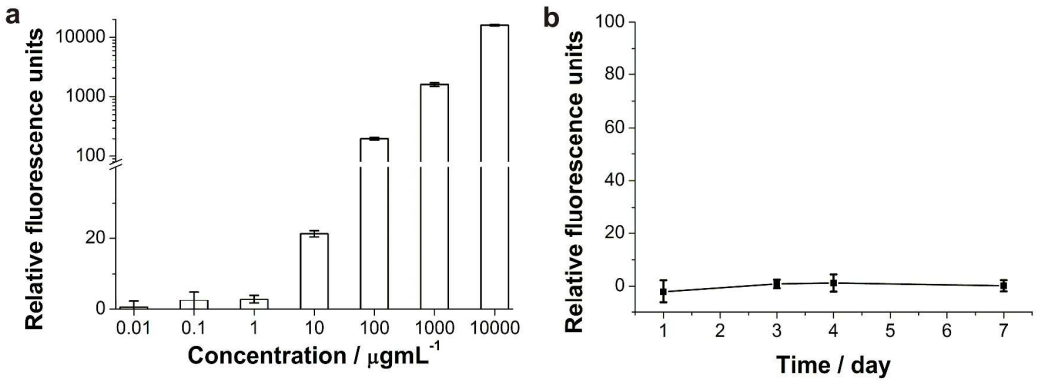

Figure S3. Silica nanoparticle release profile of SiNP-PCL nanocomposite film: (**a**) The calibration curve of fluorescence signal vs. concentration of silica nanoparticles solution (in PBS) measured by plate reader. Triplicate samples were measured for each group. (**b**) Silica nanoparticle release profile of SiNP-PCL nanocomposite film in PBS for 7 days.

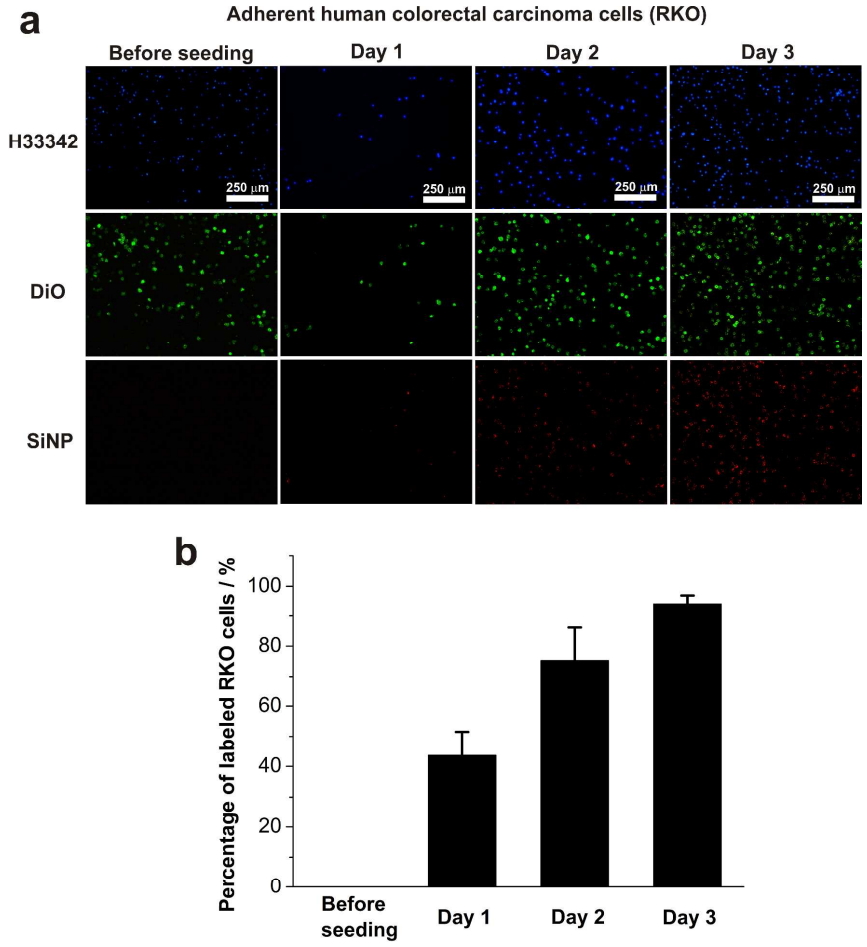

Figure S4. RKO cell labeling with SiNP-PCL nanocomposite film: (**a**) Representative fluorescence images of RKO cells before seeding and RKO cells cultured on the SiNP-PCL

nanocomposite film at day 1, 2, and 3. Hoechst 33342 stains the nuclear (blue), DiO stains the membrane (green), and red color represents silica nanoparticles. (**b**) Quantification of silica nanoparticle labeled RKO cells before and after 1, 2, and 3 days labeling

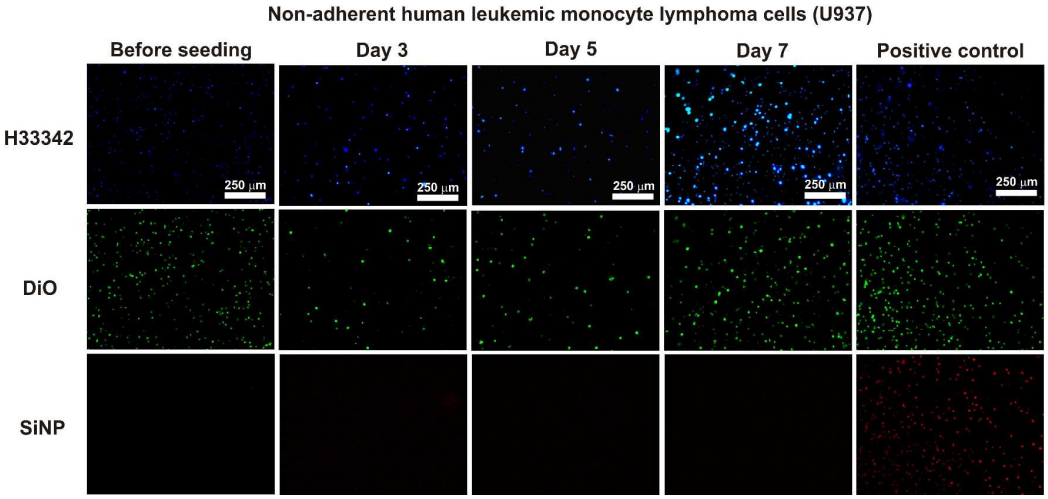

Figure S5. Non-adherent human leukemic monocyte lymphoma cells (U937) labeling when cultured on SiNP-PCL nanocomposite film for 3, 5 and 7 days. Representative fluorescence images of U937 cells before seeding and cells collected from SiNP-PCL nanocomposite film after 3-7 days culturing. Positive control represents cells labeled by 4 μg/mL free silica nanoparticles in full medium. Hoechst 33342 stains the nuclear (blue), DiO stains the membrane (green), and red color represents silica nanoparticles.

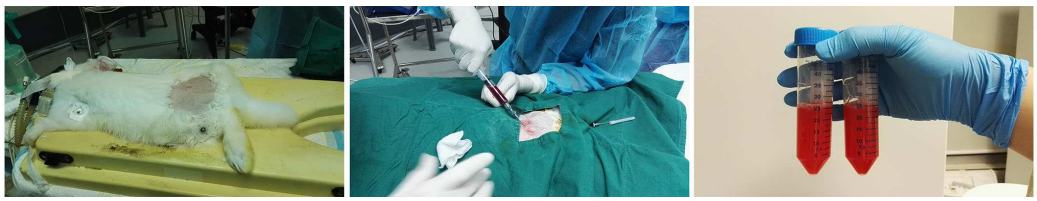

Figure S6. Rabbit bone marrow extraction. From left to right: rabbit under anaesthesia; bone marrow extraction; bone marrow aspiration after dilution and washing.

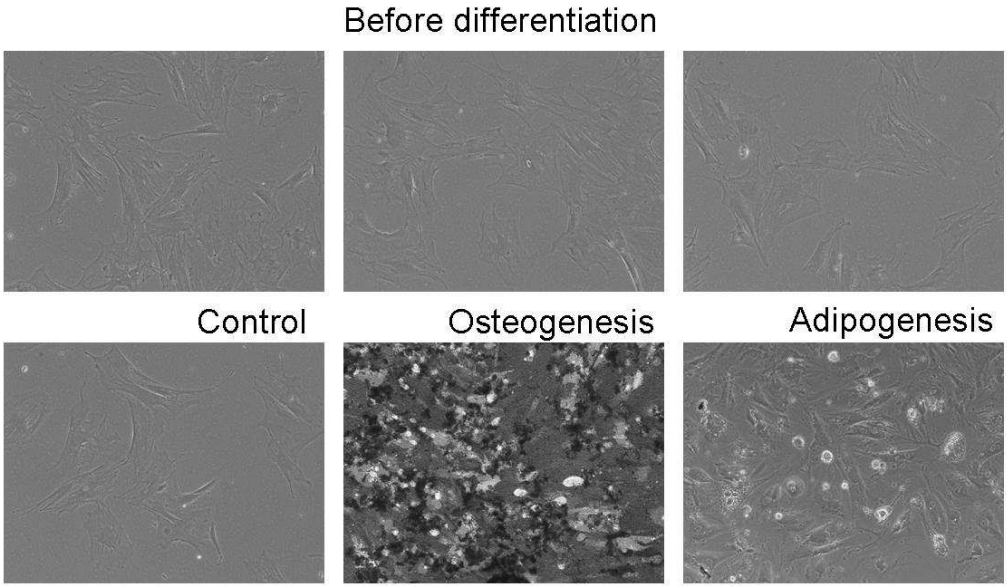

Figure S7. Osteogenic and adipogenic differentiation assay of collected cells from rabbit bone marrow aspirate that seeded on SiNP-PCL nanocomposite film. Clear mineral deposition (black dots) and lipid droplets were shown after osteogenic and adipogenic differentiation (21 days) respectively.