Supporting information for:

Magnetic Particles for Triggering of Insulin Release in INS-1E Cells Submitted to rotating Magnetic Field

By: S. Ponomareva, H. Joisten, T. François, C. Naud, R. Morel, Y. Hou, T.Myers, I. Joumard, B. Dieny, M. Carriere

Figure S1. *Fabrication process scheme and scanning electron microscopy (SEM) imaging of FeNi particles. (a) Flowchart of the process to fabricate arrays of permalloy disks, consisting in (1) Spin-coating of a Si wafer by PMMA and ma-N 2403 (MAN) photoresists, (2) patterning of a template ~~patterned~~ by DUV lithography on ma-N 2403 photoresist, (3) growth of Au/$Fe_{20}Ni_{80}$/Au disks ~~grown~~ by evaporation, (4) lift-off of ma-N 2403 photoresist, (5) lift-off of PMMA and collection of permalloy particles. ~~(b-d)~~ SEM images of 1.3 µm diameter $Ni_{80}Fe_{20}$ disks, in square array with a pitch of 3 µm (b). ~~(c)~~ Side view of permalloy disks of 200 nm height (c). ~~(d)~~ Top view of permalloy disks of 60 nm height (d).*

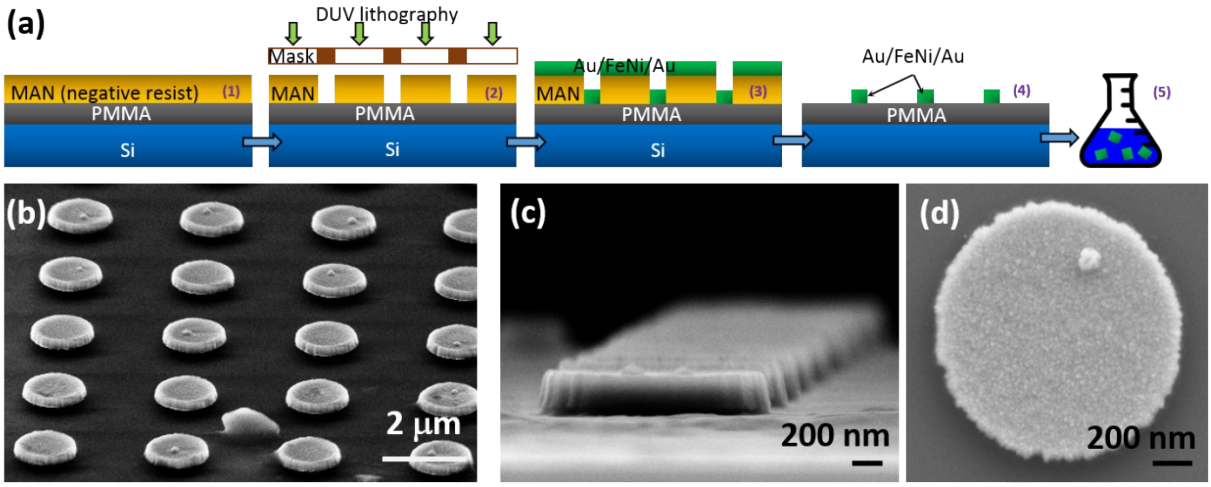

Figure S2. *Schematic representation of the experiment. Cells were starved for 2 h in glucose-free growth medium, containing Au/ $Fe_{20}Ni_{80}$/Au particles (yellow box) or not (grey box). Then, they were washed and incubated for 30 min in Krebs-Ringer-bicarbonate HEPES buffer (KRBH, 135 mM NaCl, 3.6 mM KCl, 5mM NaHCO3, 0.5 mM NaH2PO4, 0.5 mM MgCl2, 1.5 mM CaCl2, 10 mM HEPES, pH 7.4, and 0.1% (w/v) bovine serum albumin). Finally, they were exposed to either glucose (positive control), KRBH (unexposed cells) or to the rotating magnetic field at 37°C for 1 to 30 min. The exposure medium was sampled and stored at -80°C until quantification of insulin by ELISA.*

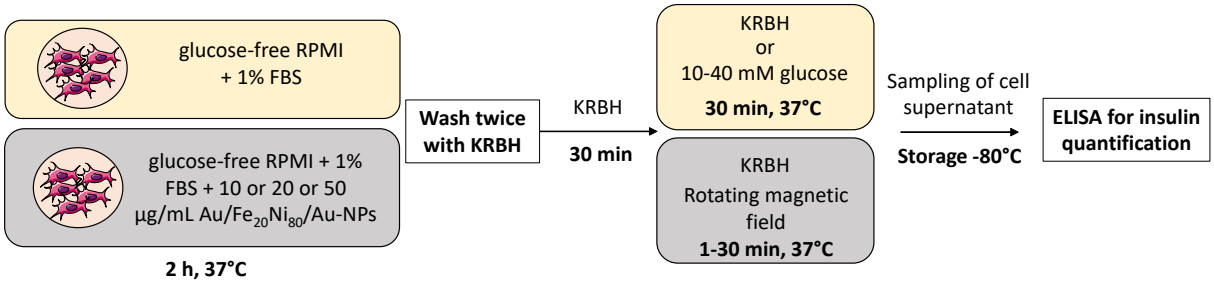

Figure S3. *Optical images of INS-1E cells seeded on MEMs after 48h. (a) MEM without FeNi particles was not treated by oxygen plasma. (b,c) MEM with FeNi particles treated by oxygen plasma. FeNi particles are clearly seen due to the transparency of PDMS.*