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Supporting Information

Magnetic nanochain-based smart drug delivery system with remote tunable drug release by a magnetic field

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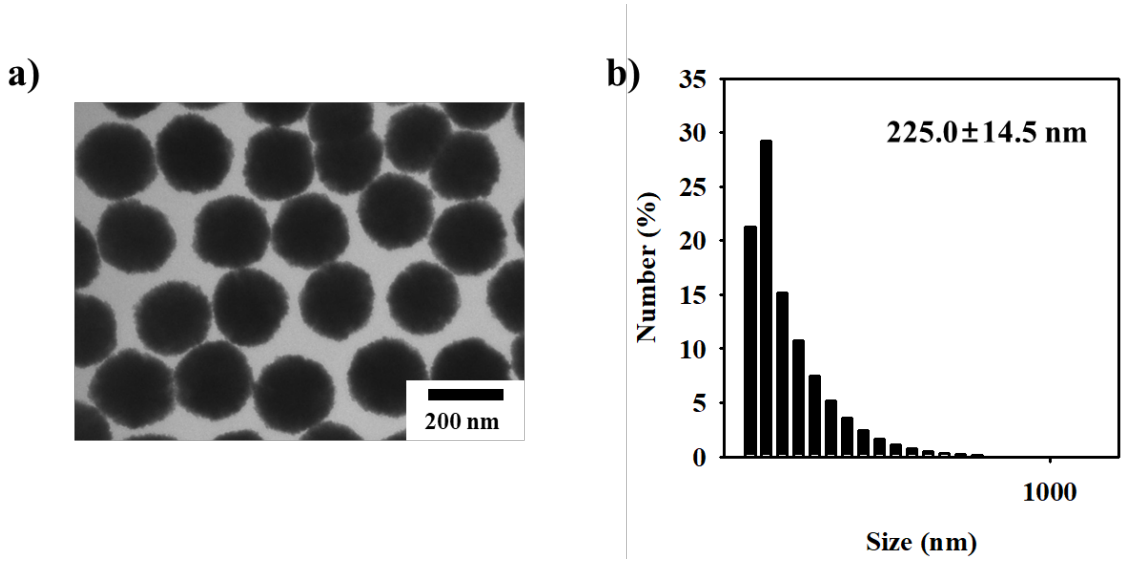

Fig. S1. a TEM image and **b** Size distribution of magnetic nanoclusters (MNCs) with monodispersity

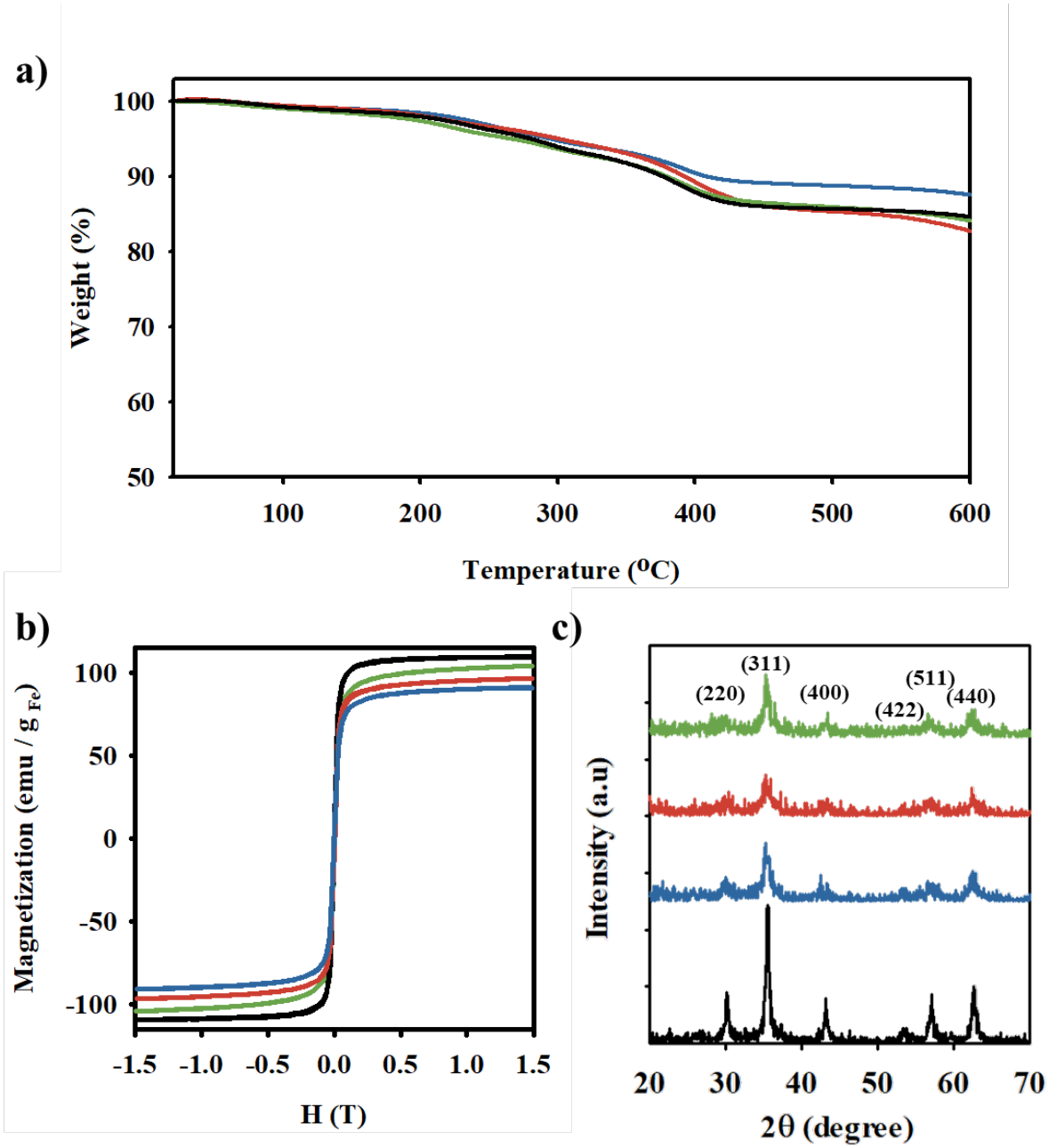

Fig. S2. a Thermogravimetric analysis (TGA), **b** magnetic hysteresis loops, and **c** X-ray diffraction (XRD) pattern of the MNs with inserted main crystalline phases (blue line: MN-1, red line: MN-2, green line: MN-3, and black line: MNCs)

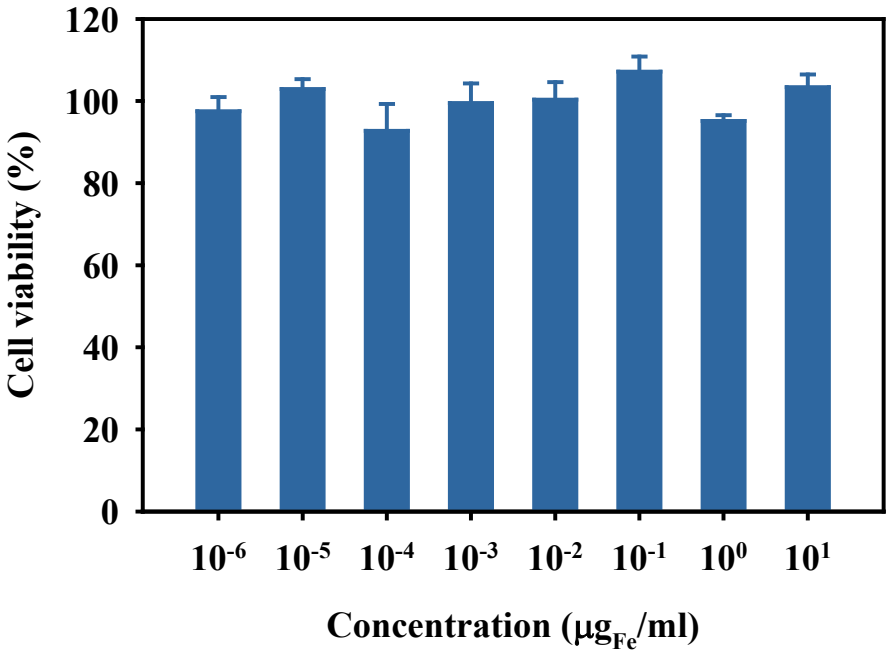

Fig. S3. Viabilities of the A431 cells treated with various concentrations of MSMN-1

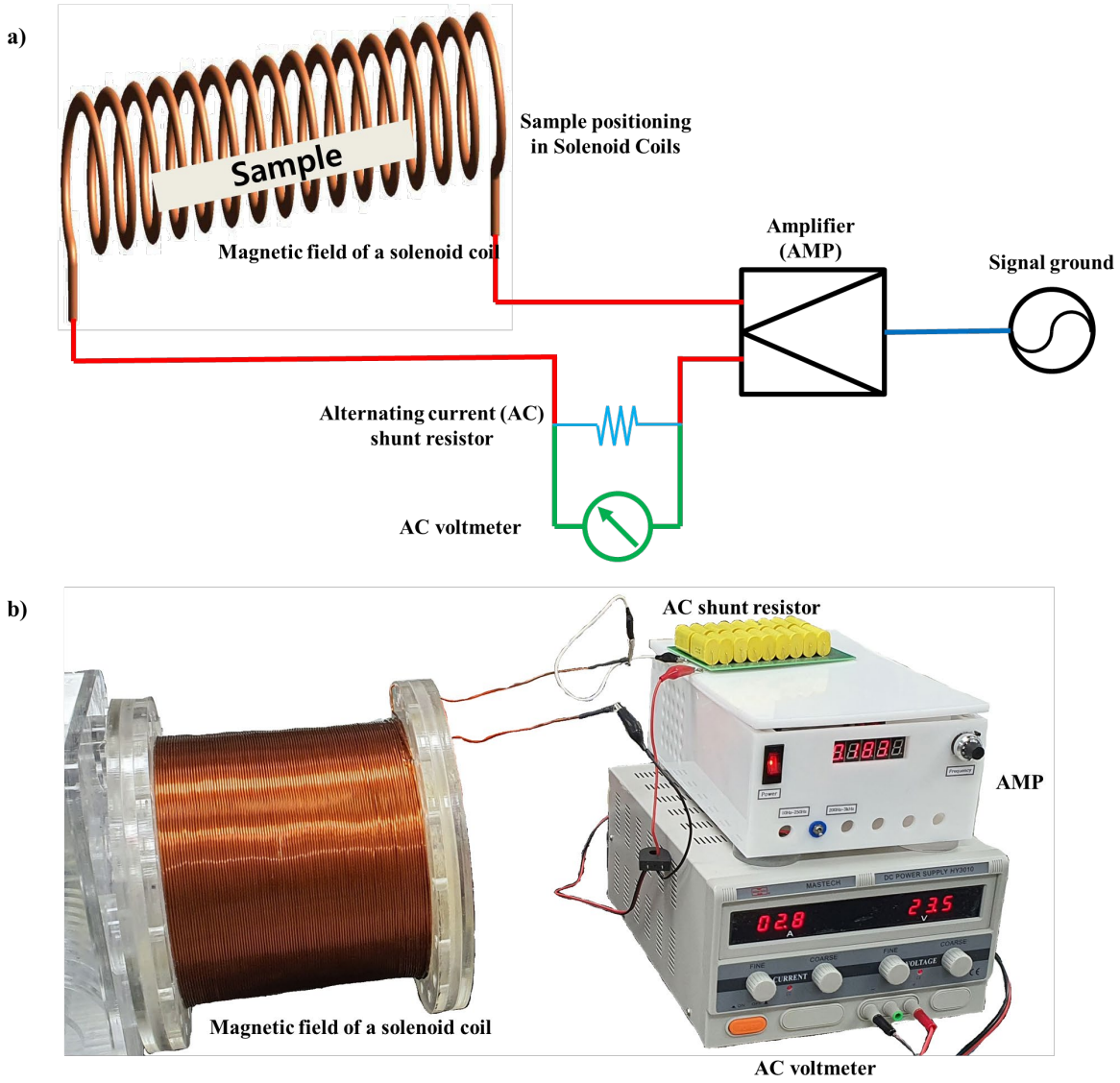

Fig. S4. **a** Scheme and **b** photograph of the external adjustable rotating magnetic field device set-up (AC: alternating current and AMP: amplifier).

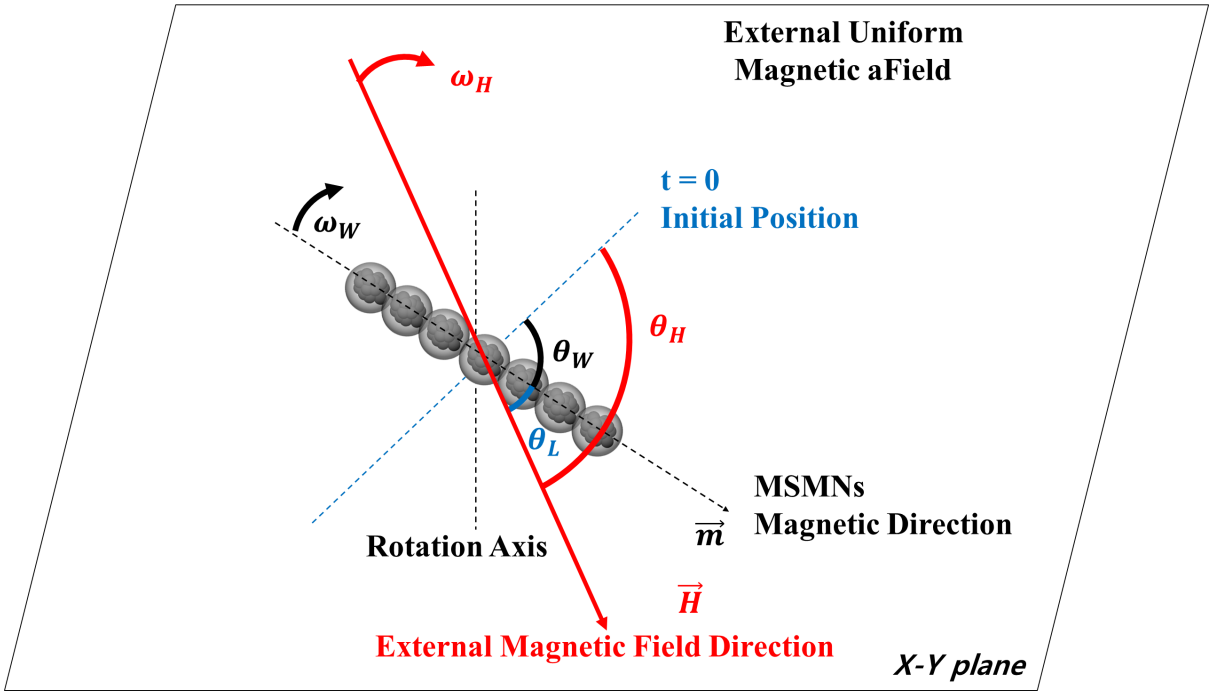

Fig. S5. Schematic illustration of a magnetically driven MSMNs

Greek letters	Description
C	Geometry factor of fluid torque
d	Diameter of MSMN (μm)
ρ	Density of fluid (kg/m^3)
H	Magnetic strength (Gs)
l	Length of MSMN (μm)
M_s	Spontaneous magnetization of MSMN (A/m)
p	Ratio of length to diameter of nanowire
μ	Viscosity of fluid (Pa·s)
τ_d	Fluid torque (N·m)
τ_m	Magnetic torque (N·m)
θ_L	Lag angle (rad)
θ_H	Angle of magnetic field (rad)
θ_W	Angle of MSMN (rad)
ω_L	Angular velocity of lag angle (rad/s)
ω_H	Angular velocity of magnetic field (rad/s)
ω_W	Angular velocity of MSMN (rad/s)

Table S1. Nomenclature: Greek letters in simulation