1. Absorption spectra of Au-NPs after addition of only trypsin

**Fig. S1** Absorption spectra of Au-NPs (1.04 nM in PBS (2.0 mM, pH = 8.5) without (red line) and with the addition of only trypsin (30 ng/mL) after incubation at room temperature for 10 min. (black line).
2. Absorption spectra of Au-NPs containing Arg₆ and trypsin in solutions of different pH values.

![Absorption spectra of Au-NPs containing Arg₆ and trypsin in solutions of different pH values.](image)

**Fig. S2** The absorption spectra of the Au-NP [1.04 nM in PBS (2.0 mM) buffer solution] containing Arg₆ peptide (3.0 µM) and trypsin (15.0 ng/mL) in solutions of different pH values; each solution of Arg₆ and trypsin was incubated for 10.0 min. at room temperature before mixing with Au-NPs for spectral measurements.

![Variation of the absorbance ratio A₆50nm/A₅20nm vs. concentrations of arginine peptides (Arg₈, Arg₆, Arg₄ and Arg₂) for the Au-NP(1.04 nM in PBS (2.0 mM, pH = 8.5) buffer solution) solutions in the presence of different amounts of arginine peptides from 0.0 to 3.0 µM.](image)

**Fig. S3** Variation of the absorbance ratio $A_{650\text{nm}}/A_{520\text{nm}}$ vs. concentrations of arginine peptides (Arg₈, Arg₆, Arg₄ and Arg₂) for the Au-NP(1.04 nM in PBS (2.0 mM, pH = 8.5) buffer solution) solutions in the presence of different amounts of arginine peptides from 0.0 to 3.0 µM.
**Fig. S4** Variation of the absorbance ratio $A_{650\text{nm}}/A_{520\text{nm}}$ vs. the reaction time for the Au-NPs [1.04 nM in PBS (2.0 mM, pH = 8.5) buffer solution] after mixing with the incubated solutions of trypsin (8.0 ng/mL), Arg$_8$ (3.0 µM) and Arg$_6$ peptide (3.0 µM) respectively.