Supporting Information

Noninvasive real-time monitoring of local drug release using nano Au-absorbed self-decomposable SiO₂ carriers

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Figure SI11 (a) A typical set of data showing the voxel number ratio plotted as a function of the normalized CT values at different time points. The CT value of each voxel at specific time points was extracted from the 3D image data sets. Gaussian fitting was employed to find the most probable CT value (named as CT peak value afterwards). **(b)** The CT peak values plotted as a function of time, and the Sigmoidal fitting. The error bars were obtained by the same method as illustrated in Figure 4. **(c)** The cumulative drug (MB) release profile up to 48 hrs at the tumor site. At each time point, 3 mice were sacrificed and the respective MB release was measured. **(d)** The relationship between tumor CT values and drug release in tumor. All of the data of (c-

d) are reported as the means \pm S.D. Sigmoidal fittings were performed by OriginPro9.1 software.

SI videos: The 3D videos of the tumor, as obtained by reconstructing images from the CT data sets recorded as a function of time.

0h-NP: 3D videos of the tumor just after administration of Au-SiO₂ NPs **3h-NP**: 3D videos of the tumor at 3 hrs after administration of Au-SiO₂ NPs **6h-NP**: 3D videos of the tumor at 6 hrs after administration of Au-SiO₂ NPs **9h-NP**: 3D videos of the tumor at 9 hrs after administration of Au-SiO₂ NPs **12h-NP**: 3D videos of the tumor at 12 hrs after administration of Au-SiO₂ NPs **15h-NP**: 3D videos of the tumor at 15 hrs after administration of Au-SiO₂ NPs **18h-NP**: 3D videos of the tumor at 18 hrs after administration of Au-SiO₂ NPs **21h-NP**: 3D videos of the tumor at 21 hrs after administration of Au-SiO₂ NPs **21h-NP**: 3D videos of the tumor at 21 hrs after administration of Au-SiO₂ NPs **21h-NP**: 3D videos of the tumor at 24 hrs after administration of Au-SiO₂ NPs **3h-NP-mAb**: 3D videos of the tumor at 3 hrs after administration of Au-SiO₂ NPs

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9h-NP-mAb: 3D videos of the tumor at 9 hrs after administration of Au-SiO₂-mAb NPs

12h-NP-mAb: 3D videos of the tumor at 12 hrs after administration of Au-SiO₂-mAb NPs **18h-NP-mAb**: 3D videos of the tumor at 18 hrs after administration of Au-SiO₂-mAb NPs

Free SiO₂ NP: 3D videos of the tumor at 24 hrs after administration of SiO₂ NPs

TEM tomography: TEM tomography videos for Au-SiO₂ NPs.



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analyzer.



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The standard deviation of the fitting curves of normalized CT value-drug release rate in tumor site in two treatment groups, NP with and without mAb, were calculated by the function below.

$$f(x)_{standard \ deviation \ between \ the \ two \ plots} = \int_{0.3}^{0.55} \left| y_{1(x_1)} - y_{2(x_1)} \right| d_x$$

$$y_{1(x_1)} = a_1 + \frac{a_2 - a_1}{1 + 10^{(lg_1 - col(x_1)) * p}}$$

a₁=0.01637;a₂=0.89935;lg1=0.46115;p=10.37738;

$$y_{2(x_{1})} = a_{3} + \frac{a_{4} - a_{3}}{1 + 10^{(lg_{1}' - col(x_{1})) * p'}}$$

a₃=0.04768;a₄=0.78154;lg1'=0.43343;p'=13.21776;