

Supporting Information for Macromol. Rapid Commun., 2010, 31, 228.

Multifunctional Magnetoplasmonic Nanoparticle Assemblies for Cancer Therapy and Diagnostics

Wei Chen^{1,2§}, Naifeng Xu^{2§}, Liguang Xu², Libing Wang², Zuokun Li², Wei Ma², Yingyue Zhu²,

Chuanlai Xu^{2*}, Nicholas A. Kotov^{1*}

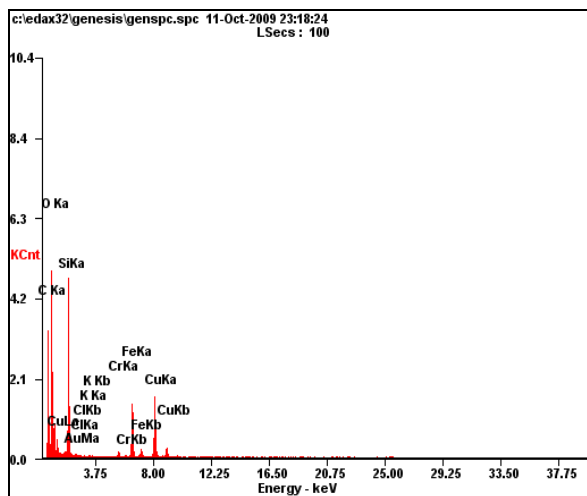
¹ *Dept. of Chemical Engineering, University of Michigan, Ann Arbor, 48109 Michigan (USA)*

² *School of Food Science and Technology, Jiangnan University, Wuxi 214122, Jiangsu Province, China*

* To whom correspondence should be addressed. E-mail: xcl@jiangnan.edu.cn; kotov@umich.edu

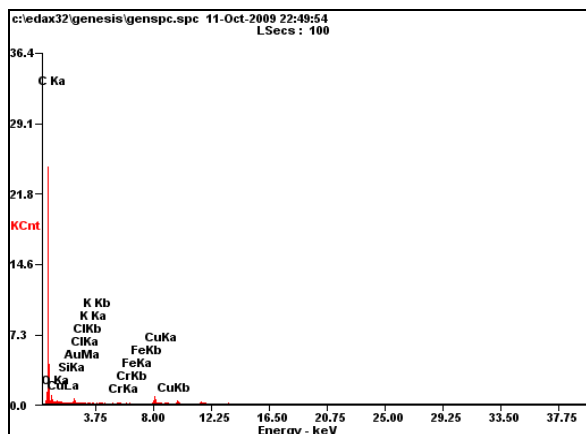
§ These two authors contributed equally to the paper.

The sample spot on the silica surface before the drug loading:



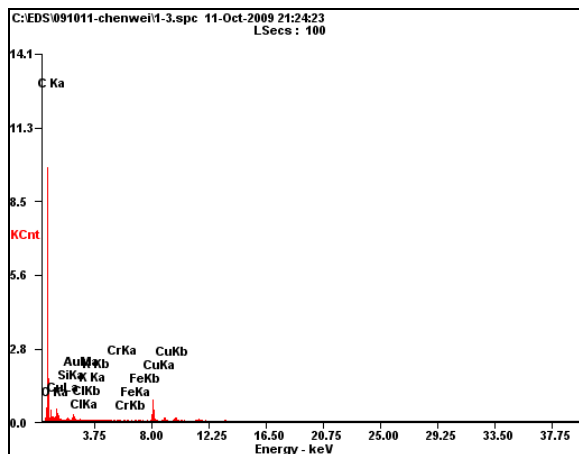
<i>em</i>	<i>Weight %</i>	<i>Atomic %</i>
<i>C K</i>	31.00	48.40
<i>O K</i>	29.20	34.20
<i>Si K</i>	14.00	09.40
<i>Au M</i>	00.20	00.00
<i>Cl K</i>	00.00	00.00
<i>K K</i>	00.10	00.00
<i>Cr K</i>	00.90	00.30
<i>Fe K</i>	10.70	03.60
<i>Cu K</i>	14.00	04.10

The sample spot on the silica surface after the drug loading:



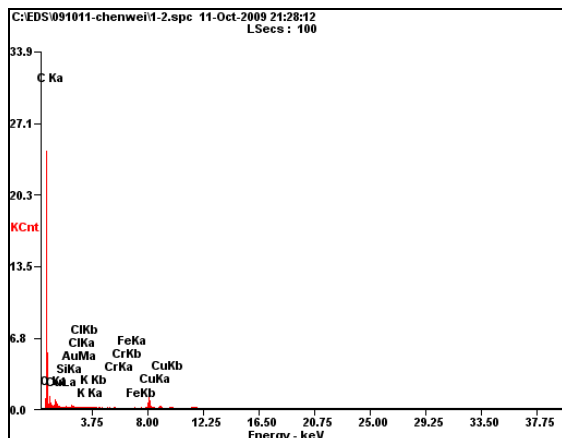
<i>Elem</i>	<i>Weight %</i>	<i>Atomic %</i>
<i>C K</i>	92.00	98.20
<i>O K</i>	01.30	01.00
<i>Si K</i>	00.10	00.00
<i>Au M</i>	04.10	00.30
<i>Cl K</i>	00.00	00.00
<i>K K</i>	00.00	00.00
<i>Cr K</i>	00.00	00.00
<i>Fe K</i>	00.00	00.00
<i>Cu K</i>	02.50	00.50

The sample spot on the Au surface before the drug loading:



<i>Elem</i>	<i>Weight %</i>	<i>Atomic %</i>
<i>C K</i>	87.40	97.00
<i>O K</i>	01.50	01.20
<i>Si K</i>	00.20	00.10
<i>Au M</i>	04.40	00.30
<i>Cl K</i>	00.10	00.00
<i>K K</i>	00.00	00.00
<i>Cr K</i>	00.10	00.00
<i>Fe K</i>	00.00	00.00
<i>Cu K</i>	06.30	01.30

The sample spot on the Au surface after the drug loading:



<i>Elem</i>	<i>Weight %</i>	<i>Atomic %</i>
<i>C K</i>	91.30	97.50
<i>O K</i>	01.70	01.40
<i>Si K</i>	00.10	00.10
<i>Au M</i>	02.20	00.10
<i>Cl K</i>	00.10	00.00
<i>K K</i>	00.00	00.00
<i>Cr K</i>	00.10	00.00
<i>Fe K</i>	00.00	00.00
<i>Cu K</i>	04.50	00.90

According to the molecular structure of curcumin $C_{21}H_{20}O_6$, the percentage of carbon is comparatively high. So, before and after the drug loading, the element component will be changed.

After the drug loading, the carbon percentage on the silica surface changed from 31% to 92%.

However, on the surface of the gold NPs, the carbon percentage changed from 87.4% to 91.3%.

So, from the results, we attribute it that the drug is loaded mostly on the surface of the MNPs.

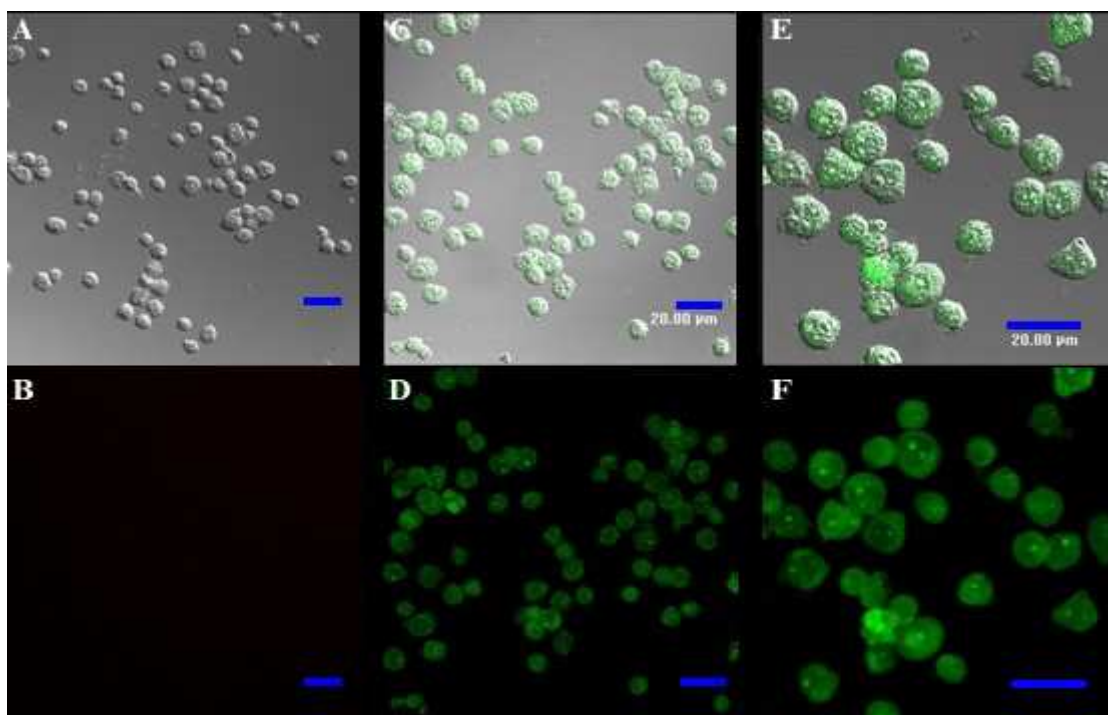


Figure CSLM. The CLSM images for the detection of early stage apoptotic HL60 cells by Annexin V-FITC (green fluorescence). (A-B) normal HL60 cells; (C-F) HL60 cells incubated with MPA-PEG-curcumin. Bar in figure: 20 μm .