

Supporting Information

LHRH conjugated gold nanoparticles assisted efficient ovarian cancer targeting evaluated via spectral photon-counting CT imaging: A proof-of-concept research

Dhiraj Kumar^{1,3#}, Mahdieh Moghiseh^{2,7#}, Kenny Chitcholtan³, Isha Mutreja⁴, Chiara Lowe^{2,7}, Ajeet Kaushik⁵, Anthony Butler^{2,7}, Peter Sykes³, Nigel Anderson², Aamir Raja^{2,6}*

¹*Division of Pediatrics Dentistry, School of Dentistry, University of Minnesota, 515 Delaware St SE, Minneapolis, Minnesota 55455 USA. E-mail: kumard@umn.edu.

²Department of Radiology, University of Otago Christchurch, 2 Riccarton Ave, School of Medicine, Christchurch New Zealand.

³Department of Obstetrics and Gynaecology, Christchurch Women Hospital, University of Otago Christchurch, 2 Riccarton Ave, School of Medicine, Christchurch New Zealand.

⁴Minnesota Dental Research Center for Biomaterials and Biomechanics (MDRCBB), School of Dentistry, University of Minnesota, 515 Delaware St SE, Minneapolis, Minnesota 55455 USA.

⁵NanoBiotech Laboratory, Department of Environmental Engineering, Florida Polytechnic University, FL 33805, USA.

⁶Department of Physics, Khalifa University, Abu Dhabi UAE.

⁷MARS Bioimaging Limited, Christchurch, New Zealand.

[#]Authros with equal contribution.

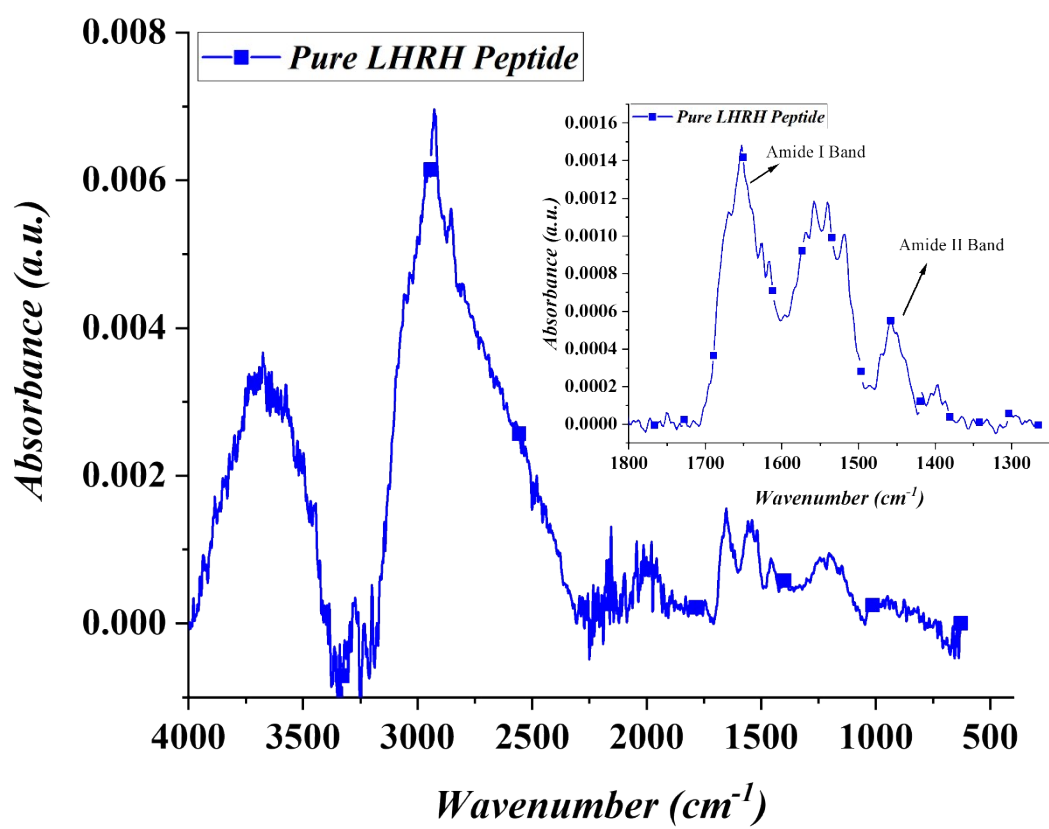


Figure S1: The FTIR spectrum for pristine LHRH powder collected in ATR mode showing various peptide peaks. The inset image showing amide I and amide II bands peaks in peptide molecules.

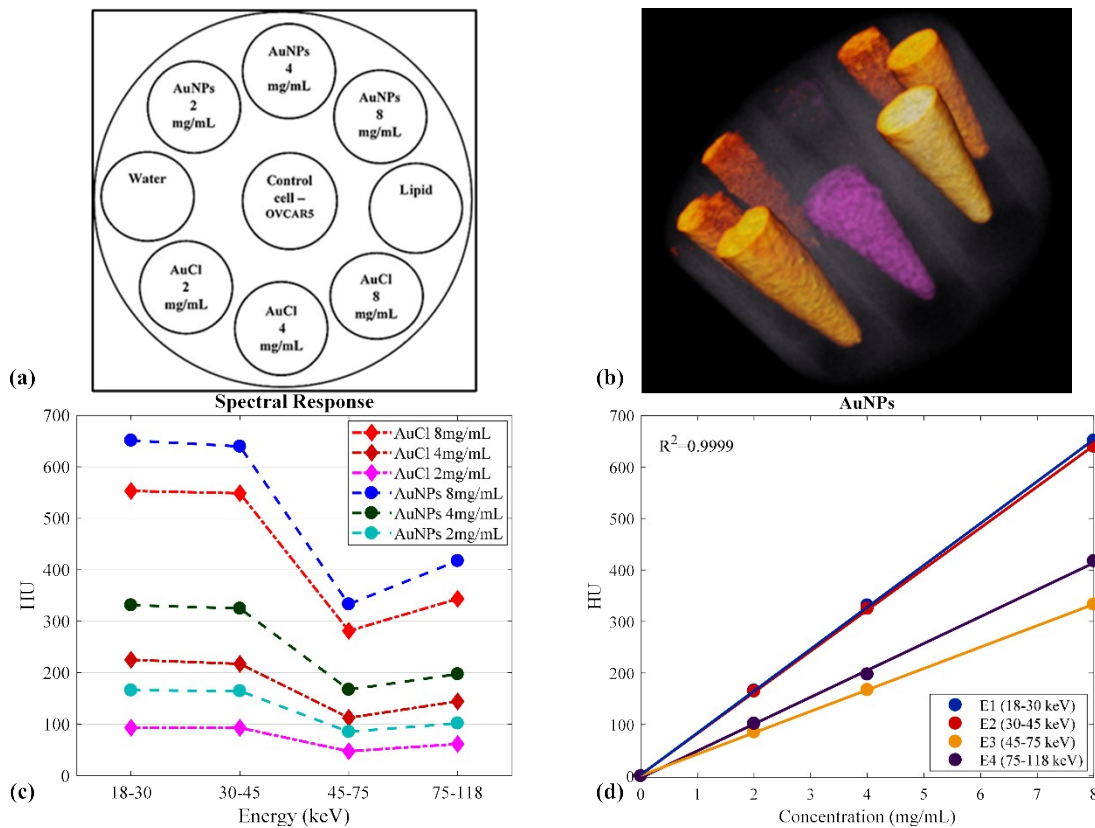


Figure S2: A and B represents the phantom arrangement and MD colour selection of different components like water, lipid, and colloidal gold solutions. C is the spectral response for three concentrations of $AuCl_{14} \cdot xH_2O$ and AuNPs (2, 4, 8 mg/mL) and all gold samples, showing the K-edge at 75-118 keV. (d) Spectral response linearity with the concentrations of AuNPs. The standard error in the measurement of all attenuation values is $\pm 2-9$ HU.

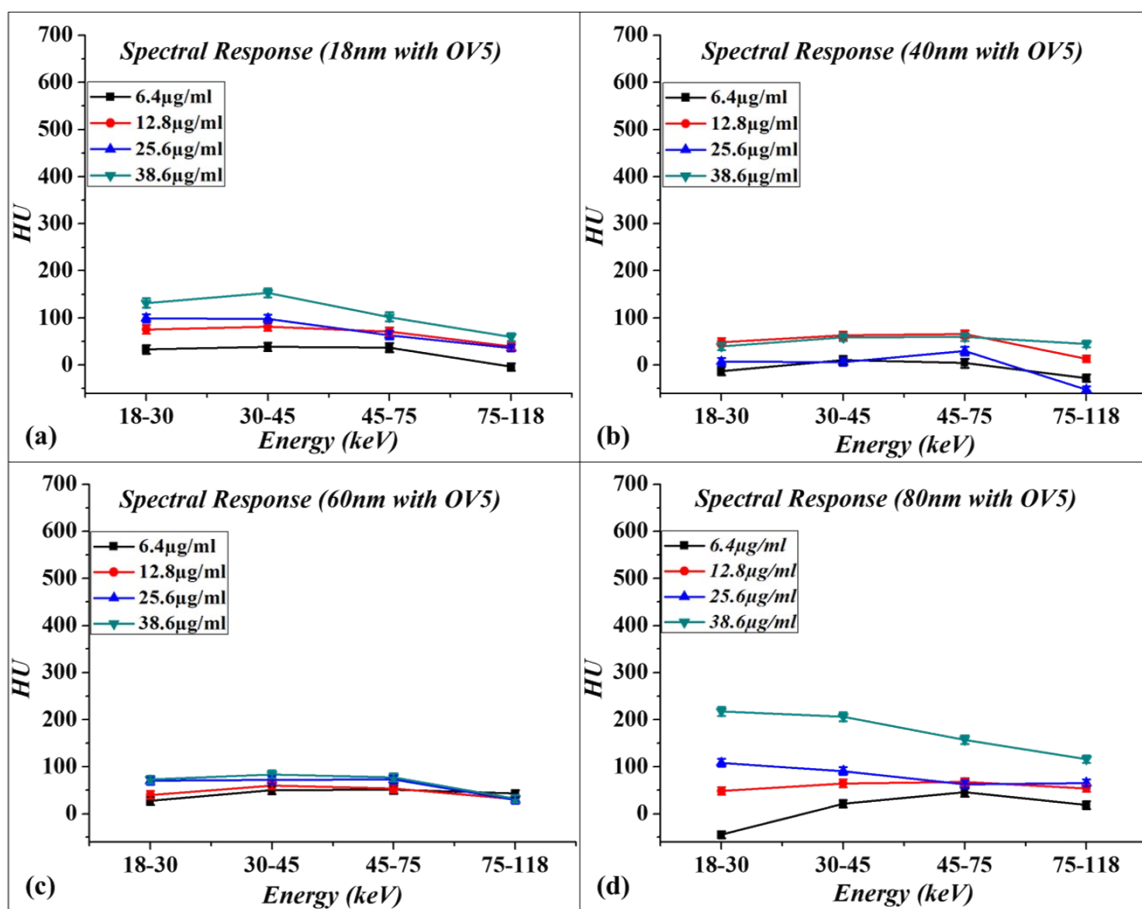


Figure S3: Spectral response for four concentrations of gold (as AuNPs) taken up by 600,000 OVCAR5 cells incubated with AuNPs of Size (a) 18 nm, (b) 40 nm, (c) 60 nm, and (d) 80 nm. In none of samples, we were able to detect the K-edge for gold at 75-118 keV.

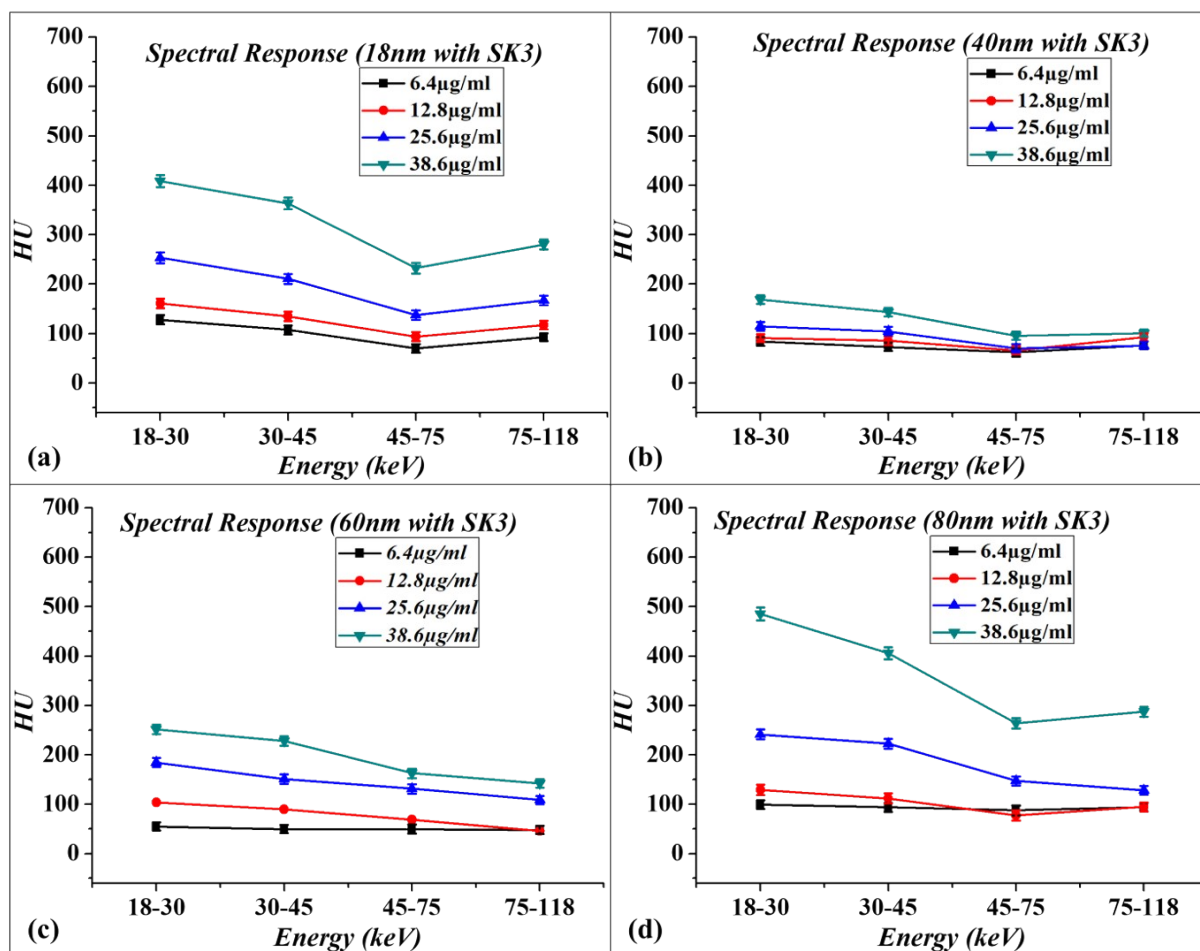


Figure S4: Spectral response for four concentrations of gold (as AuNPs) taken up by 200,000 SKOV3 cells incubated with AuNPs of Size (a) 18 nm, (b) 40 nm, (c) 60 nm, and (d) 80 nm. The cell samples for 18 nm, 40 nm and 80 nm (concentration $\geq 12.8 \mu\text{g/ml}$) showed the K-edge at 75-118 keV.

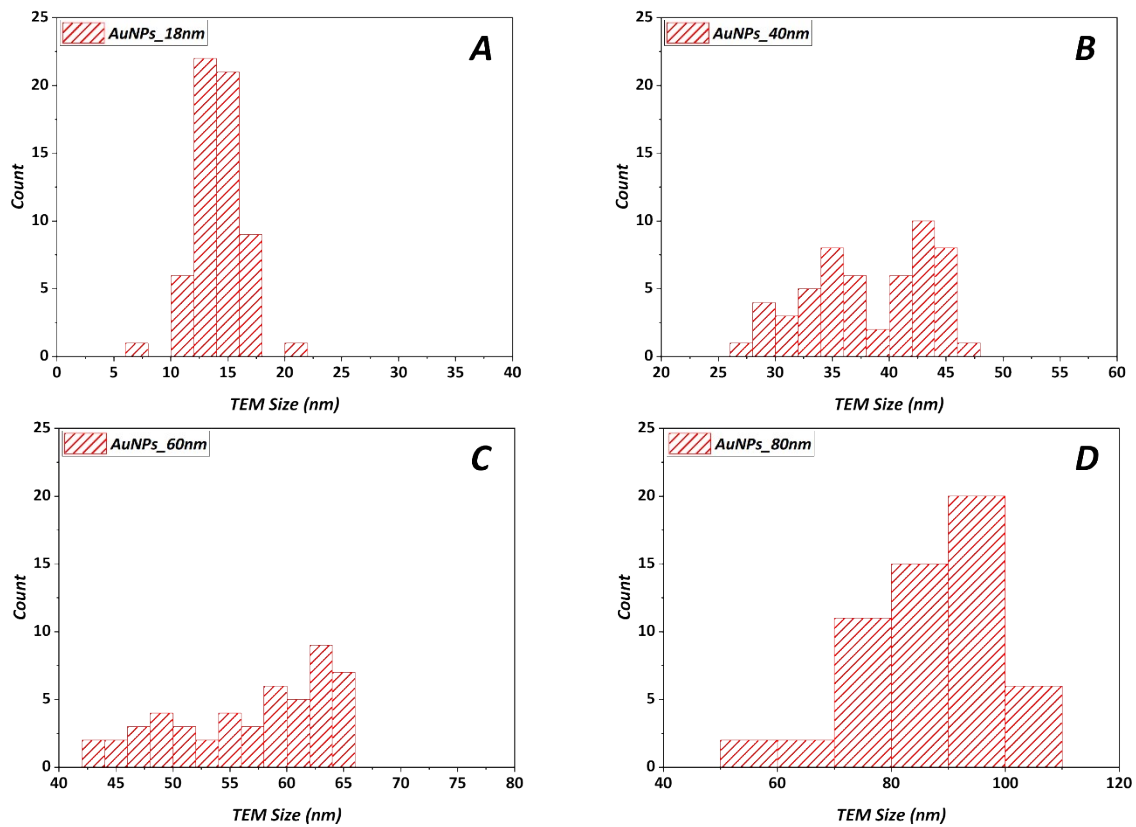


Figure S5: The histograms showing size distribution of AuNPs based on TEM images analysed using ImageJ software. To plot the histogram ~60 nanoparticles were counted for each size and graphs plotted using origin software.