Supporting information

A novel bioassay based gold nanoribbon biosensor to aid the preclinical evaluation of anticancer properties

Seetharamaiah Nalini,[a,d] Seetharamaiah Nandini,[a,d] M. B. Madhusudana Reddy,[b] Gurukar Shivappa Suresh, [a*] Jose Savio Melo, [c*] Shivayogeeswar E. Neelagund, [d *] Hunasepalya Nagaiah NaveenKumar, [d] Jakkid Sanetuntikul,[e] and Sangaraju Shanmugam [e]

[a]Department of Chemistry and Research Centre, N.M.K.R.V. College for Women, Jayanagar, Bangalore 560 011, India

[b]School of Chemistry, Reva University, Kattigenahalli, Yelahanka, Bangalore 560064, India

[c]Nuclear Agriculture and Biotechnology Division, Bhabha Atomic Research Centre, Mumbai 400 085, India

[d]Department of PG Studies and Research in Biochemistry, Jnana Sahyadri, Kuvempu University, Shankaraghatta, Shivamogga- 577 451, Karnataka, India

[e]Department of Energy Systems and Engineering, Daegu Gyeongbuk Institute of Science and Technology, Daegu 711-873, Republic of Korea

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*Corresponding author

Telephone: 91-80-26654920

Fax no: 91-80-22453665

E-mail: sureshssmrv@yahoo.co.in (G.S. Suresh),

jsmelo@barc.gov.in (J.S. Melo)

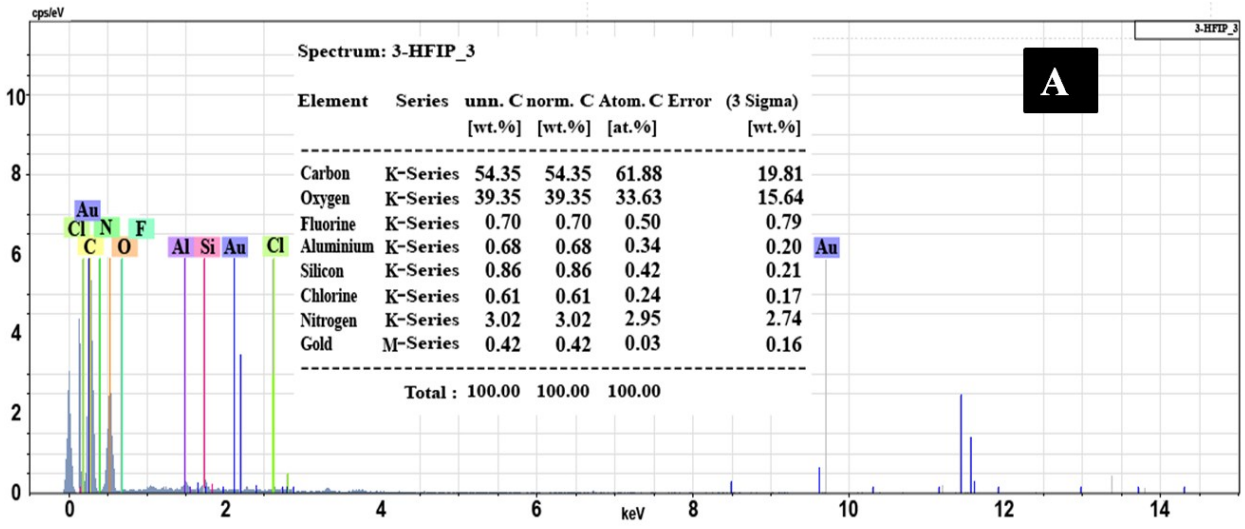
neelgund@gmail.com (S.E. Neelagund)

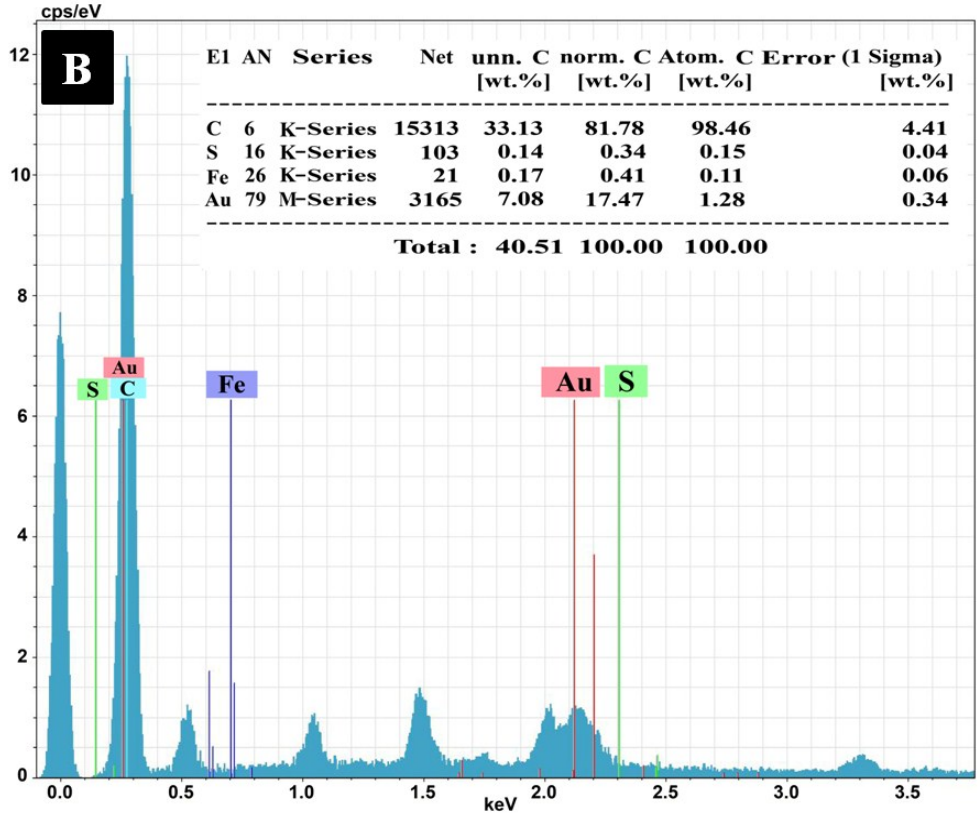
S1. Structural characterization of Q-AuNPs using SEM

Using image J software the particle size determination was performed by measuring the size of hundreds of individual non aggregrating nanoparticles and the data was prepared and plotted as Fig. 2D. Thus, (a) best SEM image was selected as a representative of bulk sample. (b) The scale was set using the scale bar of the image provided and threshold was set to a uniform value. The threshold removes unwanted background information and allows the measurement of particles themselves (c) particle size analysis was then carried out using the selected threshold image which generates a table of data encompassing particle area and diameter (d) the data is then exported to data analysis software like Microsoft excel where statistical analysis was performed and histogram was plotted using origin software.

S2. Physical characterization of the modified electrodes using EDAX

The elemental composition of these samples was also determined by EDAX. As shown in Fig.S2 A, the dipeptide microstructure showed C, O, N and F atoms. The fluorine content corresponds to HFIP solvent used for the self assembly of peptides. The EDAX profile for biotemplated Q-AuNPs (Fig. B) shows detectable Au peaks along with other elements basically similar to that of the detachable template. Thus it is likely apparent that the Q-AuNPs was exposed on the surface of the microstructure. Finally, to clarify the complete degradation of the peptide, the EDAX profile of AuNRs (Fig. C) was also acquired following proteolysis by protienase K. The result showed C, O and Au as the major signals. The percentage composition and quantitative elemental analysis for each sample obtained using EDAX is given in the inset table of the corresponding Figures.


cps/eV
A
Spectrum: 3-HFIP_3
Element Series unn. C [wt.%] norm. C [wt.%] Atom. C [at.%] Error (3 Sigma) [wt.%]
Carbon K-Series 54.35 54.35 61.88 19.81
Oxygen K-Series 39.35 39.35 33.63 15.64
Fluorine K-Series 0.70 0.70 0.50 0.79
Aluminium K-Series 0.68 0.68 0.34 0.20
Silicon K-Series 0.86 0.86 0.42 0.21
Chlorine K-Series 0.61 0.61 0.24 0.17
Nitrogen K-Series 3.02 3.02 2.95 2.74
Gold M-Series 0.42 0.42 0.03 0.16
Total : 100.00 100.00 100.00
Au
Cl N F
C O
Al Si Au Cl
Au
keV


cps/eV
B
E1 AN Series Net unn. C [wt.%] norm. C [wt.%] Atom. C [wt.%] Error (1 Sigma) [wt.%]
C 6 K-Series 15313 33.13 81.78 98.46 4.41
S 16 K-Series 103 0.14 0.34 0.15 0.04
Fe 26 K-Series 21 0.17 0.41 0.11 0.06
Au 79 M-Series 3165 7.08 17.47 1.28 0.34
Total : 40.51 100.00 100.00
Au
S C
Fe
Au S
keV

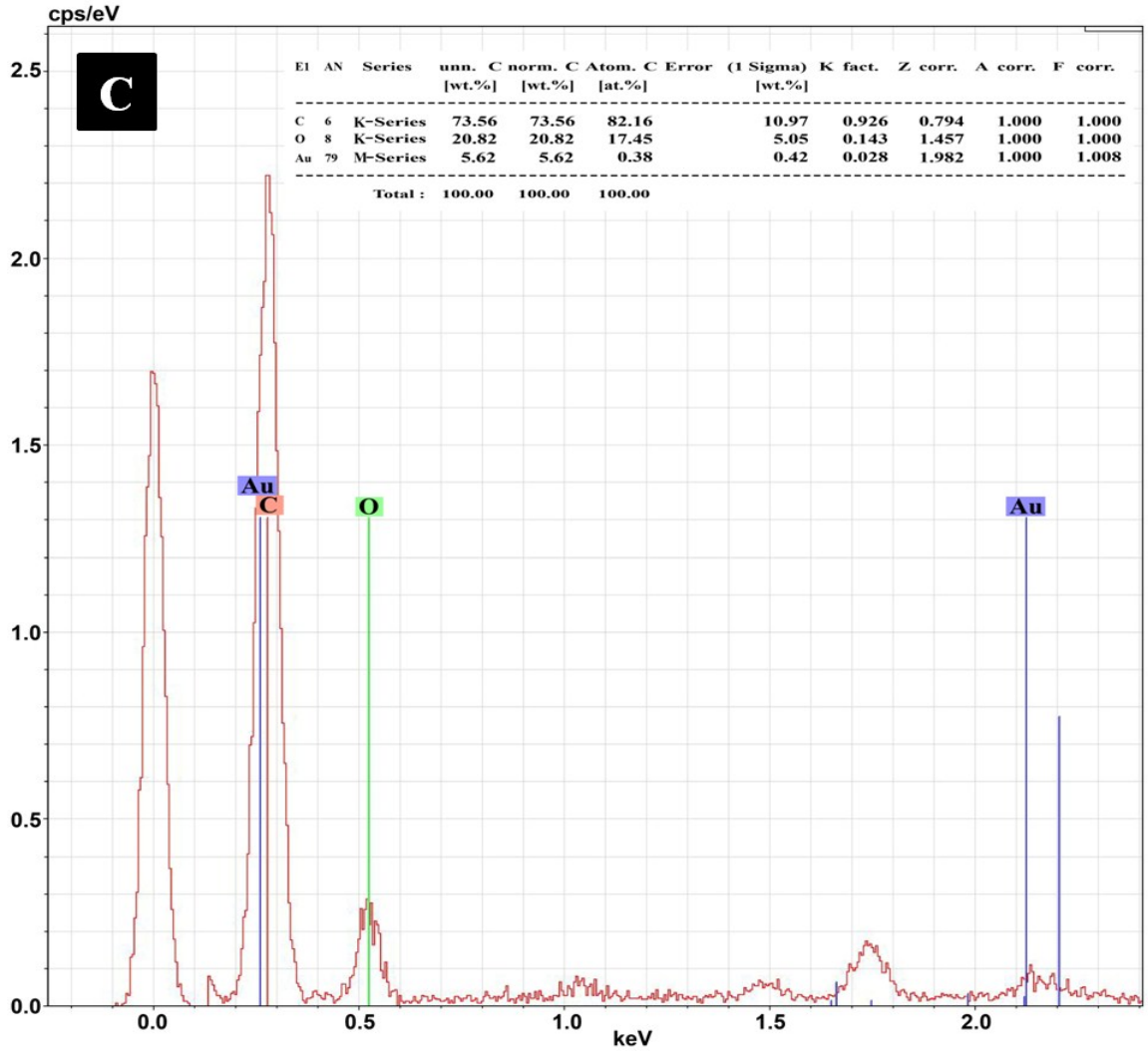


Fig.S2 EDAX images of (A) self assembled peptide (B) Q-AuNPs ensembled peptides and (C) AuNRs