*Supplementary Information*

*Original Article*

**Biocompatibility and antibacterial properties of TiCu(Ag) thin films produced by physical vapor deposition magnetron sputtering**

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**Running title:** Biocompatibility and antibacterial properties of TiCu(Ag) thin films

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**Table S1.** Measured Binding Energies (BE), full widths at half maximum (FWHM) and calculated atomic ratios for the investigated samples; the fifth column (n2/n1) shows the atomic ratios between the first and the second component, in increasing BE order, for Cu2p3/2 and Ag3d5/2 core level signals; the sixth column between the atomic ratio (nX/nTi) between silver or copper and titanium (for copper and silver, the sum of both components is considered).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***Sample*** | ***Signal*** | ***Assignment*** | ***BE (eV)*** | ***FWHM (eV)*** | ***Atomic ratios*** | |
|  |  |  | ***±0.2*** | ***±0.2*** | ***n2/n1*** | ***nX/nTi*** |
| TiCu | Ti2p3/2 | TiO2 | 485.7 | 1.6 |  | 1 |
|  | Cu2p3/2 | Cu | 932.7 | 2.2 | 1 | 0.58 |
|  |  | CuO | 934.9 |  | 0.87 |
| TiCu | Ti2p3/2 | TiO2 | 485.7 | 1.6 |  | 1 |
| (F) | Cu2p3/2 | Cu | 932.8 | 2.5 | 1 | 0.67 |
|  |  | CuO | 935.3 |  | 0.41 |  |
| TiCu-10%Ag | Ti2p3/2 | TiO2 | 485.7 | 1.5 |  | 1 |
|  | Cu2p3/2 | Cu | 932.9 | 2.1 | 1 | 3.7 |
|  |  | CuO | 935.1 |  | 1.1 |  |
|  | Ag3d5/2 | Ag | 368.3 | 1.3 | 1 | 0.37 |
|  |  | Ag2O | 369.7 | 1.3 | 0.11 |  |
| TiCu-10%Ag | Ti2p3/2 | TiO2 | 485.7 | 1.6 |  | 1 |
| (F) | Cu2p3/2 | Cu | 933.2 | 2.4 | 1 | 3.3 |
|  |  | CuO | 935.2 | 2.4 | 2.2 |  |
|  | Ag3d5/2 | Ag | 368.5 | 1.3 | 1 | 0.41 |
|  |  | Ag2O | 369.9 | 1.3 | 0.08 |  |
| TiCu-20%Ag | Ti2p3/2 | TiO2 | 485.7 | 2.1 |  | 1 |
|  | Cu2p3/2 | Cu | 933.5 | 2.7 | 1 | 5.3 |
|  |  | CuO | 935.2 | 2.7 | 1.04 |  |
|  | Ag3d5/2 | Ag | 368.3 | 1.2 | 1 | 0.77 |
|  |  | Ag2O | 369.7 | 1.2 | 0.15 |  |
| TiCu-20%Ag | Ti2p3/2 | TiO2 | 485.7 | 1.7 |  | 1 |
| (F) | Cu2p3/2 | Cu | 933.1 | 2.1 | 1 |  |
|  |  | CuO | 935.2 | 2.1 | 1.24 | 7.8 |
|  | Ag3d5/2 | Ag | 368.5 | 1.2 | 1 | 0.72 |
|  |  | Ag2O | 369.9 | 1.2 | 0.09 |  |
| TiCu-30%Ag | Ti2p3/2 | TiO2 | 485.7 | 1.9 |  | 1 |
|  | Cu2p3/2 | Cu | 932.5 | 2.6 | 1 |  |
|  |  | CuO | 934.7 | 2.6 | 6.3 | 3.4 |
|  | Ag3d5/2 | Ag | 368.2 | 1.2 | 1 | 0.63 |
|  |  | Ag2O | 369.6 | 1.2 | 0.13 |  |
| TiCu-30%Ag | Ti2p3/2 | TiO2 | 485.7 | 1.6 |  | 1 |
| (F) | Cu2p3/2 | Cu | 933.6 | 2.3 | 1 | 11 |
|  |  | CuO | 935.6 | 2.3 | 0.7 |  |
|  | Ag3d5/2 | Ag | 368.6 | 1.3 | 1 | 2.1 |
|  |  | Ag2O | 369.9 | 1.3 | 0.14 |  |

**Table S2.** XPS results after human MRC5 fibroblasts detachment with trypsin.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Sample*** | ***Signal*** | ***Assignment*** | ***BE (eV)***  ***±0.2*** | ***FWHM (eV)***  ***±0.2*** | ***Atomic ratios*** |
| TiCu | C1s | C-C  C-N;C-O  C=O  COOH | 285.0  286.6  288.4  290.1 | 1.9 | 1  0.33  0.26  0.04 |
| N1s | C=N  C-N  N+ | 398.5  400.1  402.8 | 2.3 | 1  7.5  0.3 |
| O1s | TiO2  C=O  C-O  H2O | 530.1  531.8  532.8  534.5 | 1.8 | 1  1.4  1.4  0.18 |
| Ti2p | TiO2 | 458.4 | 1.9 |  |
| Cu2p | Cu  CuO | 932.8  935.7 | 2.5 | 1  0.12 |
| TiCu-10% Ag | C1s | C-C  C-N; C-O  C=O  COOH | 285.0  286.4  288.1  289.0 | 1.9 | 1  0.4  0.26  0.07 |
| N1s | C=N  C-N  N+ | 398.8  400.1  402.5 | 2.1 | 1  3.7  0.22 |
| O1s | TiO2  C=O  C-O  H2O | 530.1  531.7  533.0  535.2 | 2.0 | 1  1.1  0.55  0.12 |
| Ag3d | Ag  Ag2O | 368.1  369.5 | 1.6 | 1  0.14 |
| Ti2p | TiO2 | 458.5 | 1.7 | 1 |
| Cu2p | Cu  CuO | 933.8  935.8 | 2.5 | 1  0.17 |
| TiCu-20% Ag | C1s | C-C  C-N;C-O  C=O  COOH | 285.0  286.5  288.2  289.7 | 1.9 | 1  0.49  0.33  0.09 |
|  | N1s | C=N  C-N  N+ | 399.0  400.4  402.3 | 2.2 | 1  1.8  0.2 |
|  | O1s | TiO2  C=O  C-O  H2O | 530.1  532.0  533.5  535.7 | 2.1 | 1  2.0  0.71  0.14 |
|  | Ag3d | Ag  Ag2O | 368.3  369.9 | 1.5 | 1  0.13 |
|  | Ti2p | TiO2 | 458.5 | 1.7 |  |
|  | Cu2p | Cu  CuO | 932.7  935.6 | 2.4 | 8.4  1 |
| TiCu-30% Ag | C1s | C-C  C-N; C-O  C=O  COOH | 285.0  286.8  288.4  290.1 | 1.9 | 1  0.42  0.02  0.06 |
| N1s | C=N  C-N  N+ | 399.0  400.5  402.1 | 1.7 | 1  0.33  0.14 |
| O1s | TiO2  C=O  C-O  H2O | 530.1  532.5  534.6  536.9 | 2.3 | 1  2.3  5.6  1 |
| Ag3d | Ag  Ag2O | 368.5  370.2 | 1.7 | 1  0.25 |
| Ti2p | TiO2 | 458.4 | 1.7 |  |
| Cu2p | Cu  CuO | 932.9  935.5 | 2.3 | 1  0.085 |