Table 2. Linear combination fitting (LCF) results of the Cu K-edge XANES spectra acquired from soils spiked with dissolved Cu(NO3)2 (top) and CuO-NPs (bottom). The LCF results are shown as percentage composition of the total Cu in terms of the listed standards. FeO(OH) indicates any ferric oxyhydroxide (in this case, Cu-Fh and Cu-Gt have been summed).

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Cu(NO3)2** | **BARREN GROUND** | | | | | | **LENSWOOD** | | | | | | | **HAMILTON** | | | | | | | **PIMPINIO** | | | | | | | **MINNIPA** | | | | | | | | |
| **Components** | **Day 0** | | **Day 3** | | **Day 5** | | **Day 0** | | **Day 3** | | | **Day 5** | | **Day 0** | | **Day 3** | | **Day 5** | | | **Day 0** | | **Day 3** | | **Day 5** | | | **Day 0** | | | **Day 3** | | | **Day 5** | | |
| **CuO (NPs)** |  | |  | |  | |  | |  | | |  | |  | |  | |  | | |  | |  | |  | | |  | | |  | | |  | | |
| **Cu-FeO(OH)** | 88.7 | | 55.8 | | 48.2 | | 28.7 | | 35.9 | | | 32.3 | | 34 | | 43.5 | | 31.4 | | |  | |  | |  | | |  | | | 40.3 | | | 19.3 | | |
| **NOM\*1** |  | | 38.2 | | 46.2 | | 39.3 | | 62.6 | | | 61.8 | | 45.4 | | 37.1 | | 54.2 | | |  | |  | |  | | | 47.8 | | | 21.5 | | | 50.9 | | |
| **CuCO3** |  | |  | |  | |  | |  | | |  | |  | |  | |  | | | 51.4 | | 51.2 | | 50.6 | | |  | | | 20.7 | | |  | | |
| **Cu2S** |  | |  | |  | | 31.9 | | 1.4 | | | 5.9 | | 11.8 | | 12.9 | | 8.7 | | | 15 | | 15.5 | | 16.1 | | | 16.7 | | | 17.5 | | | 13.5 | | |
| **Cu(OH)2** |  | |  | |  | |  | |  | | |  | | 8.8 | | 7.2 | | 6.5 | | | 36.2 | | 43.2 | | 35.0 | | | 37.4 | | |  | | | 17.2 | | |
| **Cu-HA** | 11.3 | | 6.2 | | 6.1 | |  | |  | | |  | |  | |  | |  | | |  | |  | |  | | |  | | |  | | |  | | |
| **Day 0 fraction\*2** |  | | 54.7 | | 54.3 | |  | | 4.3 | | | 18.4 | |  | | 81.7 | | 73.5 | | |  | | 52.5 | | 64.9 | | |  | | |  | | | 45.9 | | |
| **SUM** | 100.0 | | 100.2 | | 100.5 | | 100.1 | | 99.9 | | | 100.0 | | 100.0 | | 100.7 | | 100.7 | | | 102.6 | | 109.9 | | 101.7 | | | 101.9 | | | 100.0 | | | 100.9 | | |
| **R-factor** | 5.0E-04 | | 3.8E-05 | | 4.7E-05 | | 7.0E-04 | | 7.6E-05 | | | 1E-04 | | 1.9E-04 | | 1.6E-04 | | 9.8E-05 | | | 8.8E-04 | | 2.6E-04 | | 1.9E-04 | | | 2.8E-04 | | | 3.7E-04 | | | 7.7E-05 | | |
|  |  |  | |  | |  | |  | |  |  | |  | |  | |  | |  |  | |  | |  | | |  | |  |  | | |  | | |  | |
| **CuO-NPs** | **BARREN GROUND** | | | | | | **LENSWOOD** | | | | | | | **HAMILTON** | | | | | | | **PIMPINIO** | | | | | | | **MINNIPA** | | | | | | | | |
| **Components** | **Day 0** | | **Day 3** | | **Day 5** | | **Day 0** | | **Day 3** | | | **Day 5** | | **Day 0** | | **Day 3** | | **Day 5** | | | **Day 0** | | **Day 3** | | | **Day 5** | | **Day 0** | | | | **Day 3** | | | **Day 5** | |
| **CuO (NPs)** | 73.2 | |  | |  | |  | |  | | |  | | 83.9 | |  | |  | | | 81.2 | | 41.1 | | | 26.5 | | 97.1 | | | | 60.7 | | | 46.2 | |
| **Cu-FeO(OH)** | 22.9 | |  | | 40.8 | | 24.3 | | 33.5 | | | 28.4 | | 13.7 | | 39.1 | | 40.7 | | | 17.6 | | 39.4 | | | 60.7 | | 4.3 | | | | 20.9 | | | 28.9 | |
| **NOM\*1** |  | | 75.7 | | 59.2 | | 67.3 | | 67.2 | | | 67.4 | |  | | 56.7 | | 51.2 | | |  | | 13.0 | | |  | |  | | | | 10.8 | | | 16.8 | |
| **CuCO3** |  | |  | |  | |  | |  | | |  | |  | |  | |  | | |  | |  | | |  | |  | | | |  | | |  | |
| **Cu2S** | 5 | |  | |  | | 8.4 | |  | | | 4.2 | | 5.4 | | 4.2 | | 8.1 | | | 3.2 | | 6.4 | | | 14.0 | |  | | | | 7.7 | | | 10.1 | |
| **Cu3(PO4)2** |  | | 4.0 | |  | |  | |  | | |  | |  | |  | |  | | |  | |  | | |  | |  | | | |  | | |  | |
| **Cu(OH)2** |  | | 20.3 | |  | |  | |  | | |  | |  | |  | |  | | |  | |  | | |  | |  | | | |  | | |  | |
| **Cu-HA** |  | |  | |  | |  | |  | | |  | |  | |  | |  | | |  | |  | | |  | |  | | | |  | | |  | |
| **SUM** | 101.1 | | 100.0 | | 100.0 | | 100.0 | | 100.7 | | | 100.0 | | 103.0 | | 100.0 | | 100.0 | | | 102.0 | | 99.9 | | | 101.2 | | 101.4 | | | | 100.1 | | | 102.0 | |
| **R-factor** | 7.4E-05 | | 7.8E-05 | | 1.0E-04 | | 4.7E-04 | | 9.3E-05 | | | 1.2E-04 | | 1.6E-04 | | 1.0E-04 | | 1.5E-04 | | | 2.2E-04 | | 1.7E-04 | | | 2.8E-04 | | 1.5E-04 | | | | 6.7E-05 | | | 8.6E-05 | |

\*1 NOM is the sum of the percentage contributions from native SR-NOM and SR-NOM dialysed with Cu(NO3)2.  
\*2 Day 0 fraction is the percentage attributed by the LCF to the corresponding Day 0 spectrum before distributing to other components.