Goldplating SOP (JH BLADON)

Before plating: get gold out of fridge, set up autoplater on a computer, and make sure you have a well.

If you're installing NanoZ for the first time… install from the WhiteMatter LLC website, and drop the ‘electrodes.ini’ file in the google docs folder into C:\Users\{your username}\AppData\Local\nanoZ

VERY IMPORTANT: when dipping tetrodes into solution DO NOT dip them so deep as to dip the cannula in, this will cause gold to flow UP the cannulae, dry, and stick your tetrodes to the cannula.

Day 1

1. Descend one jumper of tetrodes 5-7 mm out of the bottom of the cannula
2. Test impedance at 1000 Hz
   1. wires that have an impedance above 10 are likely out, if you can, try to repin
3. Lift the drive out of the solution, when burning bubbles are likely to form and will interfere with your connection (The wires will appear to be disconnected)
4. Set voltage at +1.00 ua and burn for 2 seconds fixed plating time
   1. Impedance should drop below 2 mOhms
5. Lift tetrodes out of solution once more and dip back in
6. Plate at -.5 ua for 1 sec, match 500 kOhms, 5 passes
   1. Impedance should drop to around 450 kOhms
   2. This is the step where you can deselect wires that haven’t dropped below 1 mOhm, and you will want to replace these tetrodes
7. Plate at -0.05 to -0.025 for 1 sec, 10 passes match 250 kOhms
   1. Wires should end around 250
8. Repeat for J2 and J3

Day 2

* Descend one jumper of tetrodes like on day 1
* If you replaced any tetrode, start with step 1 on day 1
* For the tetrodes that were already plated:
  1. Plate at -0.05 to -0.025 for 1 sec, 10 passes match 250 kOhms
     1. Wires should end around 250
  2. Do this two to three times, the second time match to 240 kOhms, and the third time match to 230 kOhms

Troubleshooting:

* wires that are around 500 kOhms may have bubbles on them and you can try to lift the drive out of the solution and replace them. You can also try to burn off that wire at +1 ua again, but it will return to low impedance rapidly so be patient the second time around.
* If the wire is above 10, it is out, check at the EIB pin.
* If many wires are not going down in impedance, switch out your gold to new fresh gold (in fridge)
* DO NOT DESCEND DRIVE SO FAR THAT THE MOUTH OF THE GUIDE CANNULA IS DIPPED INTO THE GOLD SOLUTION
* If any wires are now above 1mOhms, or any wires are now below 100kOhms, they will need to be recut or replaced.

| Jumper 1 | | |  | Jumper 2 | | |  | Jumper 3 | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Tetrode | Wire | Tetrode wire | | Tetrode | Wire | Tetrode Wire | | Tetrode | Wire | Tetrode Wire |
| 1 | 1 | 1 |  | 9 | 1 | 1 |  | 17 | 1 | 1 |
|  | 2 | 2 |  |  | 2 | 2 |  |  | 2 | 2 |
|  | 3 | 3 |  |  | 3 | 3 |  |  | 3 | 3 |
|  | 4 | 4 |  |  | 4 | 4 |  |  | 4 | 4 |
| 2 | 5 | 1 |  | 10 | 5 | 1 |  | 18 | 5 | 1 |
|  | 6 | 2 |  |  | 6 | 2 |  |  | 6 | 2 |
|  | 7 | 3 |  |  | 7 | 3 |  |  | 7 | 3 |
|  | 8 | 4 |  |  | 8 | 4 |  |  | 8 | 4 |
| 3 | 9 | 1 |  | 11 | 9 | 1 |  | 19 | 9 | 1 |
|  | 10 | 2 |  |  | 10 | 2 |  |  | 10 | 2 |
|  | 11 | 3 |  |  | 11 | 3 |  |  | 11 | 3 |
|  | 12 | 4 |  |  | 12 | 4 |  |  | 12 | 4 |
| 4 | 13 | 1 |  | 12 | 13 | 1 |  | 20 | 13 | 1 |
|  | 14 | 2 |  |  | 14 | 2 |  |  | 14 | 2 |
|  | 15 | 3 |  |  | 15 | 3 |  |  | 15 | 3 |
|  | 16 | 4 |  |  | 16 | 4 |  |  | 16 | 4 |
| 5 | 17 | 1 |  | 13 | 17 | 1 |  | 21 | 17 | 1 |
|  | 18 | 2 |  |  | 18 | 2 |  |  | 18 | 2 |
|  | 19 | 3 |  |  | 19 | 3 |  |  | 19 | 3 |
|  | 20 | 4 |  |  | 20 | 4 |  |  | 20 | 4 |
| 6 | 21 | 1 |  | 14 | 21 | 1 |  | 22 | 21 | 1 |
|  | 22 | 2 |  |  | 22 | 2 |  |  | 22 | 2 |
|  | 23 | 3 |  |  | 23 | 3 |  |  | 23 | 3 |
|  | 24 | 4 |  |  | 24 | 4 |  |  | 24 | 4 |
| 7 | 25 | 1 |  | 15 | 25 | 1 |  | 23 | 25 | 1 |
|  | 26 | 2 |  |  | 26 | 2 |  |  | 26 | 2 |
|  | 27 | 3 |  |  | 27 | 3 |  |  | 27 | 3 |
|  | 28 | 4 |  |  | 28 | 4 |  |  | 28 | 4 |
| 8 | 29 | 1 |  | 16 | 29 | 1 |  | 24 | 29 | 1 |
|  | 30 | 2 |  |  | 30 | 2 |  |  | 30 | 2 |
|  | 31 | 3 |  |  | 31 | 3 |  |  | 31 | 3 |
|  | 32 | 4 |  |  | 32 | 4 |  |  | 32 | 4 |

