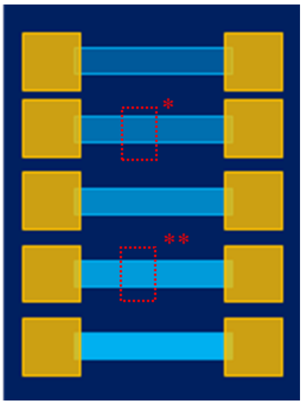

Figure 1: Pt-wire temperature sensors fabrication flow:

- Five different Pt wires of different thickness have been printed using Atomic-layer 3D printer by repeating 100, 200, 300, 400 & 500 ALD cycles of $MeCpPtMe_3$+O_3 with a write speed of ~2 mm/s.
- The width of each wire was 400 µm, defined by the size of the printer nozzle.
- Au contact pads for measurement purposes have been deposited using conventional PVD Au through a shadow mask, defining the length of each sensing element = 2 mm.
- red-dashed rectangles mark the areas where plane-view SEM micrographs (below) were taken

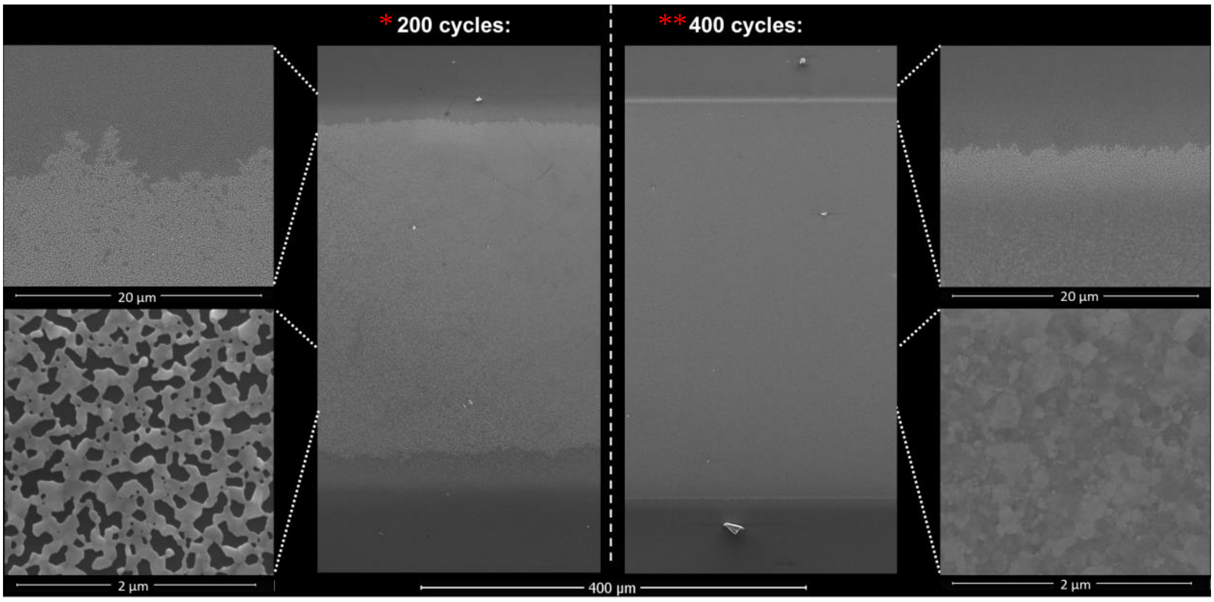

Figure 2: Plane-view SEM micrographs of the fabricated Pt temperature sensors, deposited by 200 (**left**) vs. 400 (**right**) ALD cycles. Low magnification images in the center display the entire width of the (horizontally-running) Pt wires. Magnifications on the sides show the wires' edges (top row) and the film structure inside the Pt wires – magnified 100.000 X (bottom row). As typical for this thermal Pt ALD process, the film grows as a progressively densening network of Pt grains.

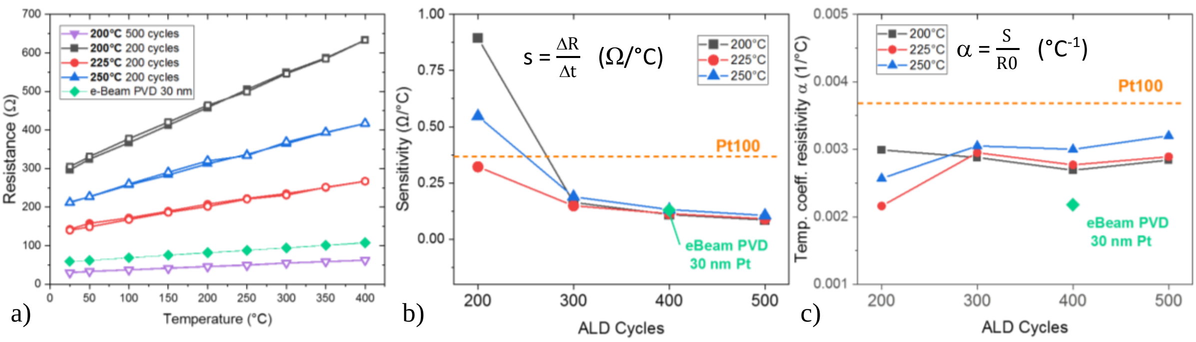

Figure 3: a) Resistance vs. temperature curves of selected sensors. Films of 200 cycles show rather high resistance strongly dependent on the fabrication temperature while for thicker films (300-500 cycles) the resistivity (deposition-temperature regardless) is comparable to the 30 nm e-beam PVD Pt wire. **b)** Summary of the temperature sensitivity (**S**) of printed sensors of different thickness for different fabrication temperatures, in comparison to a 30 nm thick PVD Pt wire (thickness comparable to 400 ALD cycles sample) and a Pt100 standard. **c)** Temperature coefficient of resistivity **α** (S normalized by room temperature resistance) for the investigated sensors. Most of the printed sensors show higher α values than the conventional 30 nm PVD Pt thin film wire sensor and are comparable to the Pt100 standard.