Supporting materials:

Growth of thin AlN films on Si wafers by reactive magnetron sputtering: role of processing pressure, magnetron power and nitrogen/argon gas flow ratio

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S1. Sputtering Apparatus

All AlN films in this work have been produced by reactive direct-current magnetron sputtering utilizing Flextura 200 setup (Polyteknik AS). An illustration of the setup can be seen in Figure S1. The apparatus consists of four vacuum chambers which are evacuated by individual fore pump / turbopump systems. Background pressures of approximately $(8–9)\times10^{-9}$ mbar can be achieved in the electron-beam and sputtering chambers where the growth is performed. A robotic arm allows for substrates to be transferred between chambers without breaking vacuum. For the growth utilising magnetron sputtering, there is a possibility to use up to 3 different targets (3 inch in diameter). The material deposition can be carried out on the area of up to 4 inch in diameter. The software is capable to control the processing pressure (the pressure in the magnetron chamber during the film growth), magnetron power, gas flow and substrate temperature in the system. Up to 3 different gases can be supplied simultaneously. For the reactive sputtering processes, the partial pressure of the sputtering gas (argon) and reactive gas (nitrogen or oxygen) can be tuned independently, thus, allowing for precise control of their ratio.

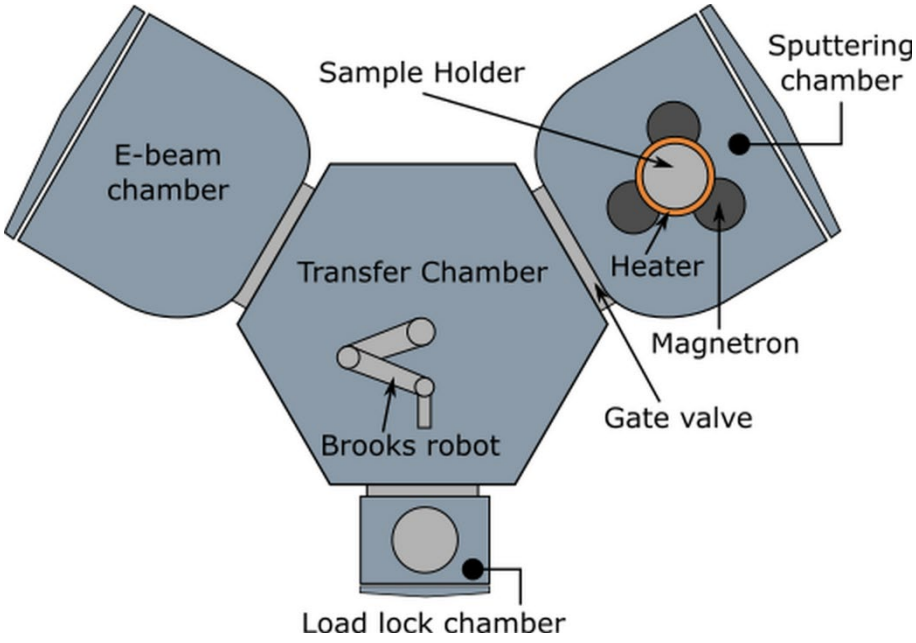


Figure S1. Schematic illustration of the main chambers and parts of Flextura 200.