Electronic Supplementary Information

Deposition of Triazine-Based Graphitic Carbon Nitride *via* Plasma-Induced Polymerisation of Melamine

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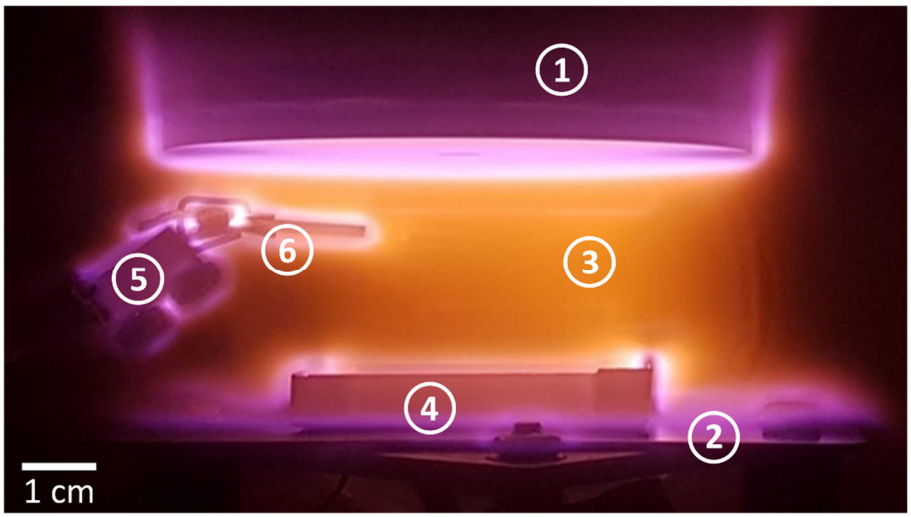

Figure S1. Photograph of the reaction chamber during the plasma-based deposition of TGCN: (1) upper electrode, (2) grounded electrode and heating plate, (3) Ar/N_2 plasma, (4) molybdenum crucible filled with melamine powder, (5) bias clamp and (6) substrate.

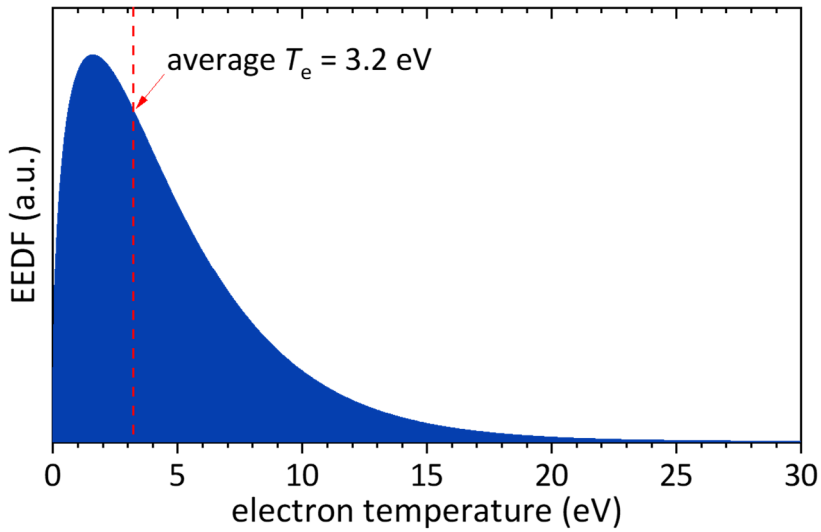

Figure S2. Plot of the Maxwell-Boltzmann distribution for an average electron temperature (T_e) of 3.2 eV. This value for the used rf plasma (27.12 MHz, 5 mbar, 10 W) was estimated *via* Boltzmann-plot technique.

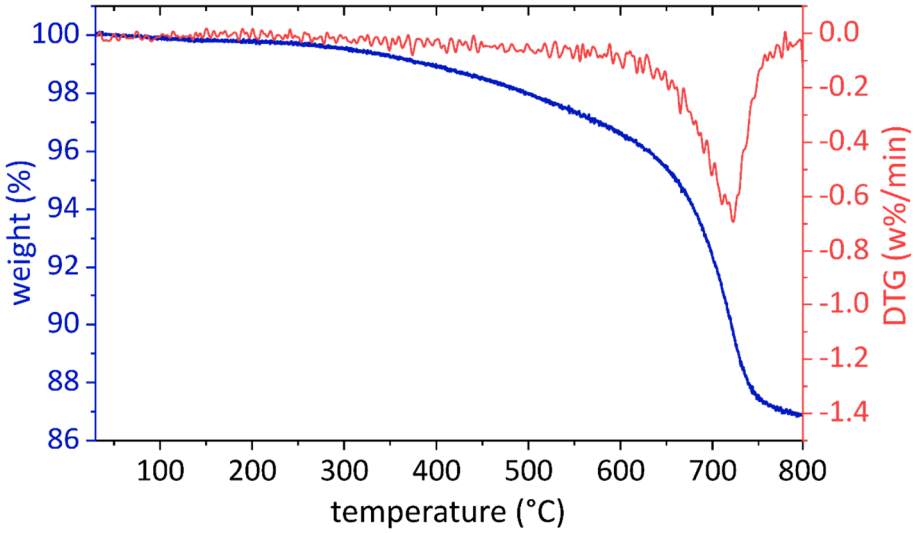

Figure S3. Thermogravimetric analysis data of a TGCN sample under argon atmosphere and a heating rate of 5 °C/min. Maximum of the first derivative of the TG curve is at 713 °C. Remaining part of the sample at 800 °C is 87 w%. The weight loss of approx. 4 w% until a heating temperature of 350 °C might be due to the desorption of oligomeric parts of the sample. The smooth decrease of the TGA curve without any distinct steps indicates that the product is not decomposing.

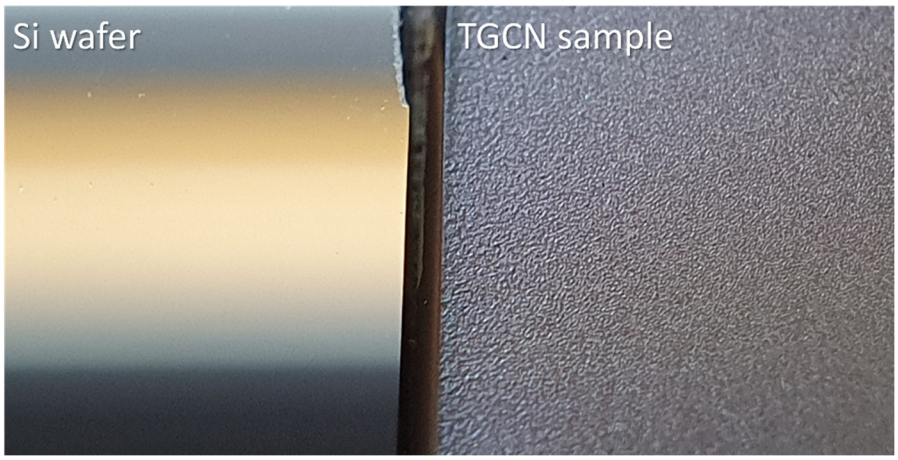

Figure S4. Photographs of a bare silicon wafer (left) and a TGCN sample (right).

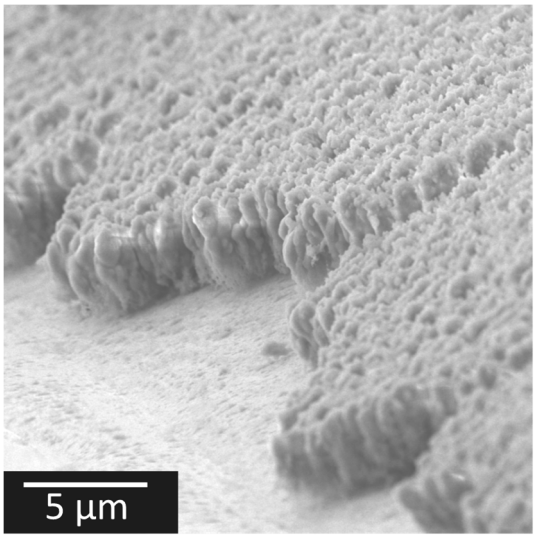

Figure S5: Tilted-view SEM image of the TGCN film at the side edge of the silicon wafer.

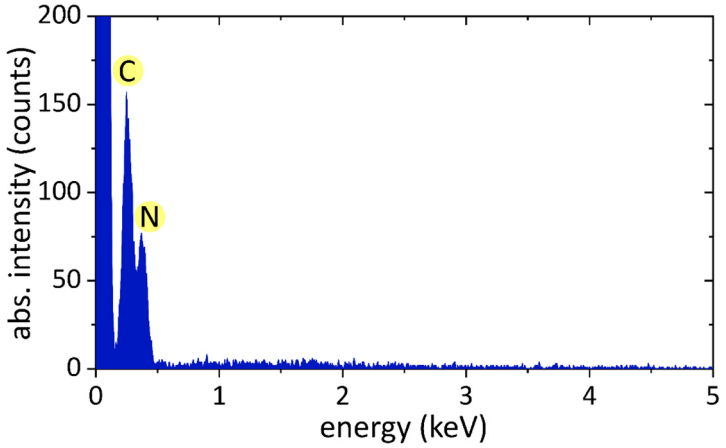

Figure S6. Representative EDX spectrum in the range between 0 und 5 keV of a deposited TGCN sample measured at a beam energy of 22 keV with 180 s scan time. According to the database included in the INCA software (Zeiss) and in accordance with the literature, the signal around 0.3 keV is assigned to carbon and the signal at 0.4 keV is correlated to nitrogen. Oxygen, which would be visible as signal at 0.5 keV, was not detected.

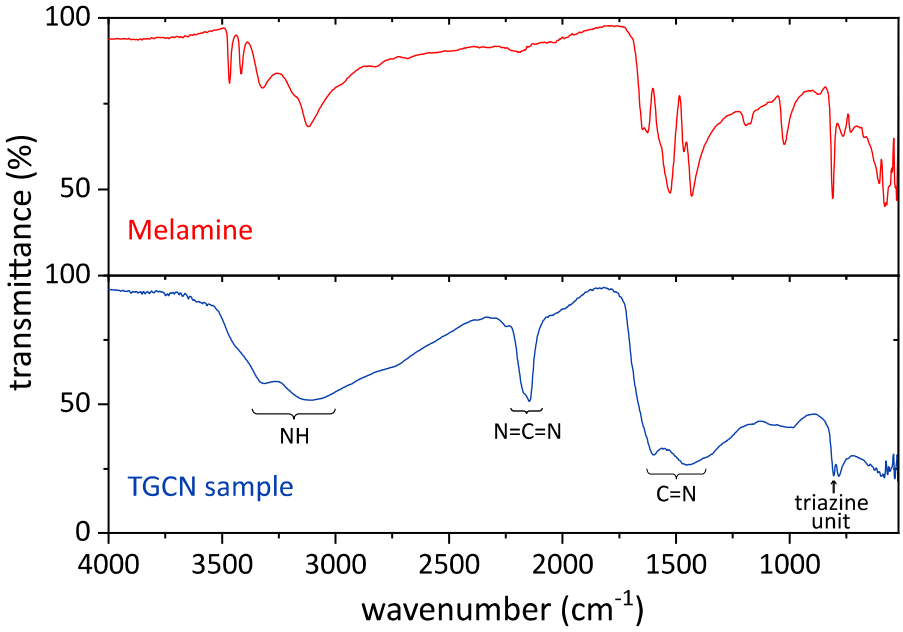

Figure S7. FT-IR spectra of melamine and a TGCN sample.

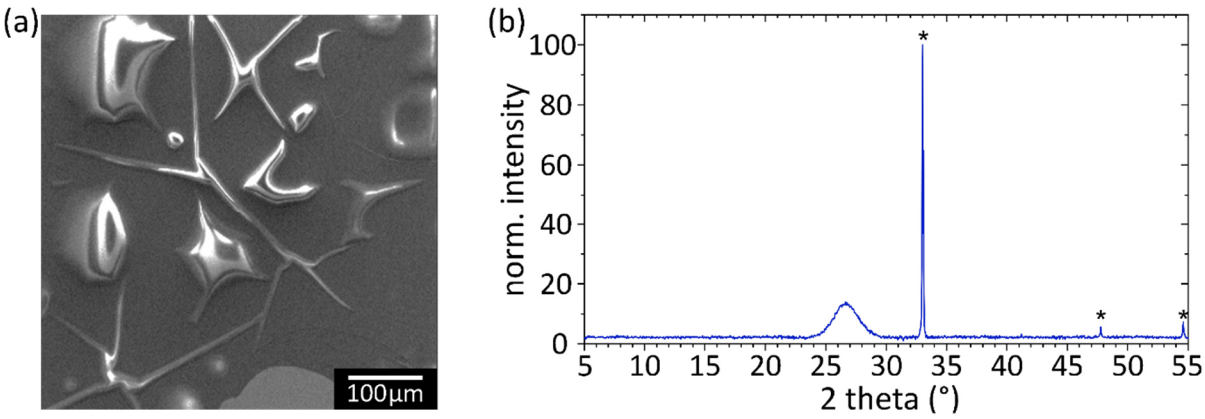

Figure S8. (a) SEM image of a TGCN sample deposited at continuous rf plasma (Ar/N_2, 27.12 MHz, 10 W) and (b) X-Ray diffraction pattern of the sample (* = reflection of the wafer substrate).

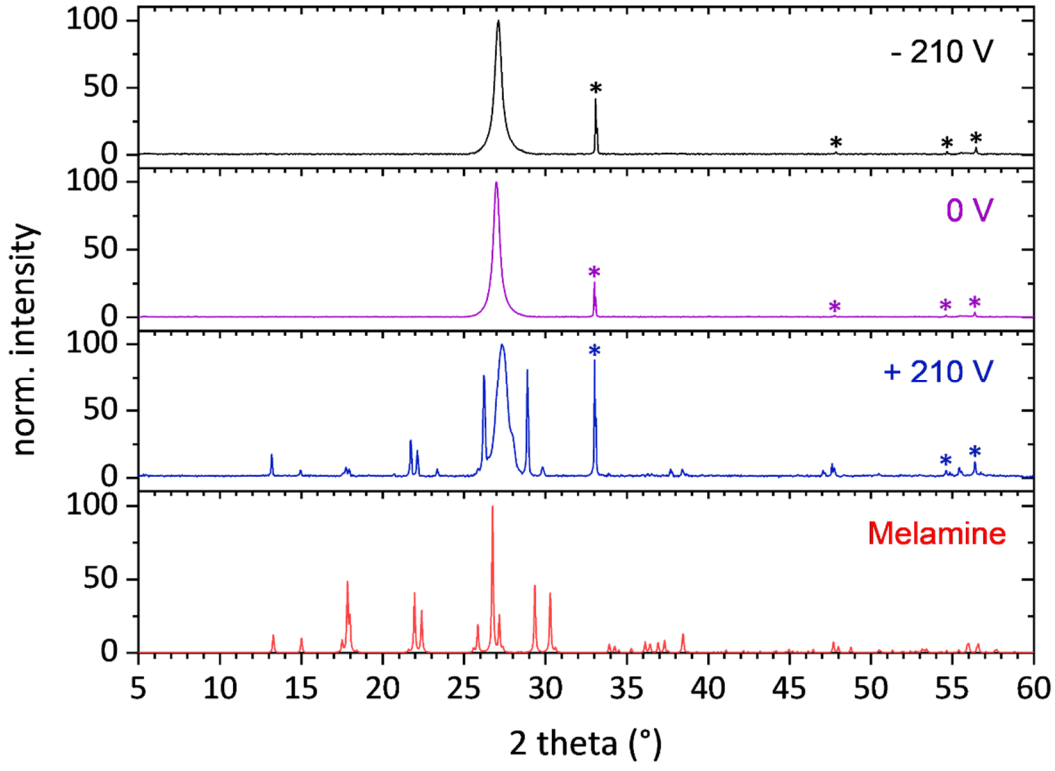

Figure S9. X-ray diffraction data of pure melamine, a sample deposited without applying bias voltage (0 V), a sample fabricated with applying +210 V dc bias to the substrate relative to ground and a sample with -210 V dc substrate bias relative to ground (* = reflection of the wafer substrate).