

Supporting information

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1. CVD apparatus

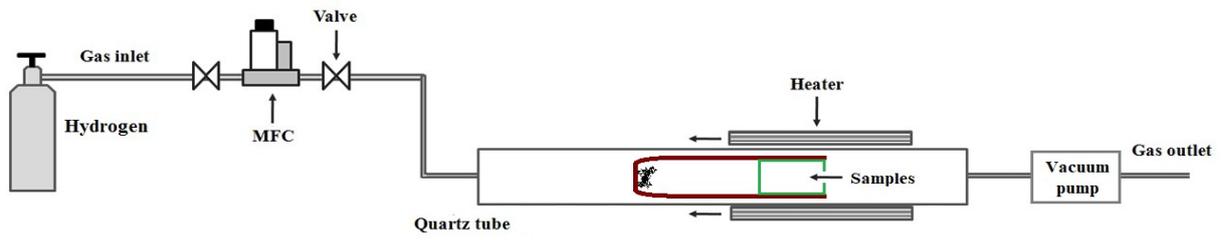


Figure S1 Scheme of CVD apparatus.

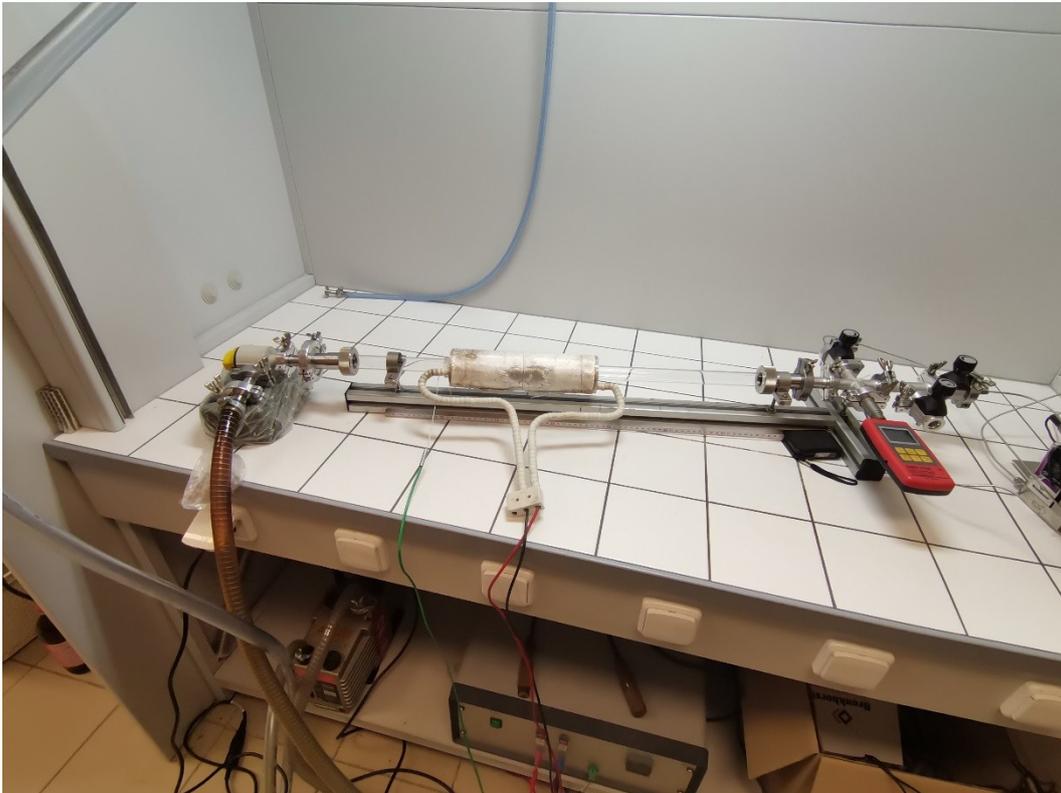


Figure S2 CVD apparatus with external heating used in the experiments.

2. Deconvoluted Raman spectra of gained materials

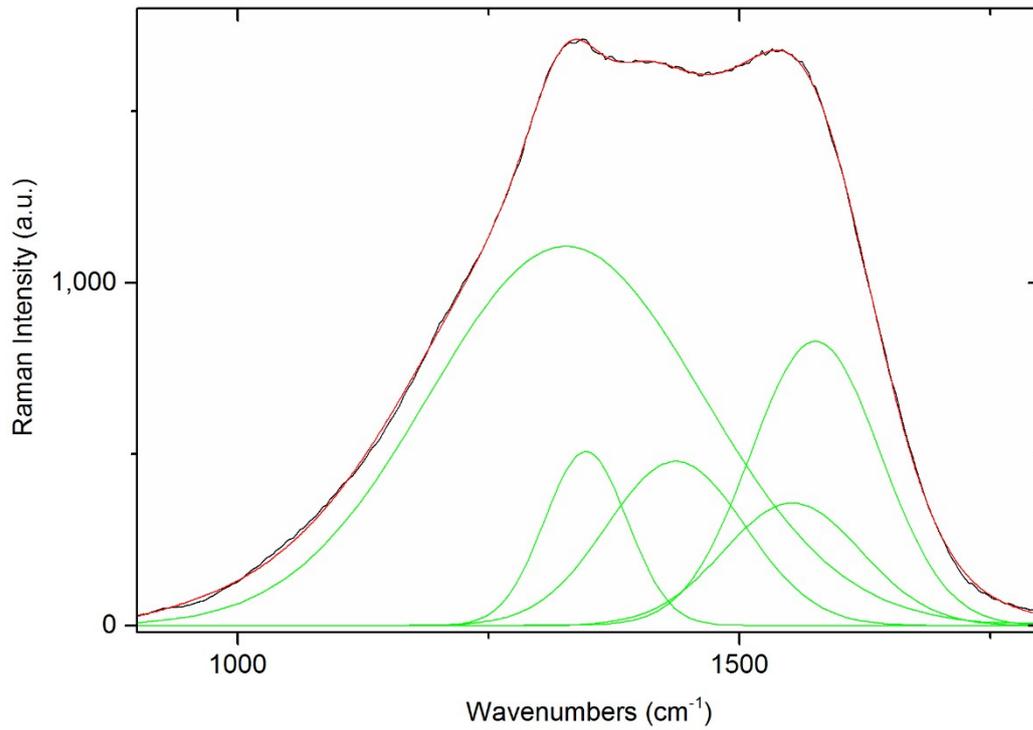


Figure S3 Deconvoluted part of Raman spectrum of **1-1050**.

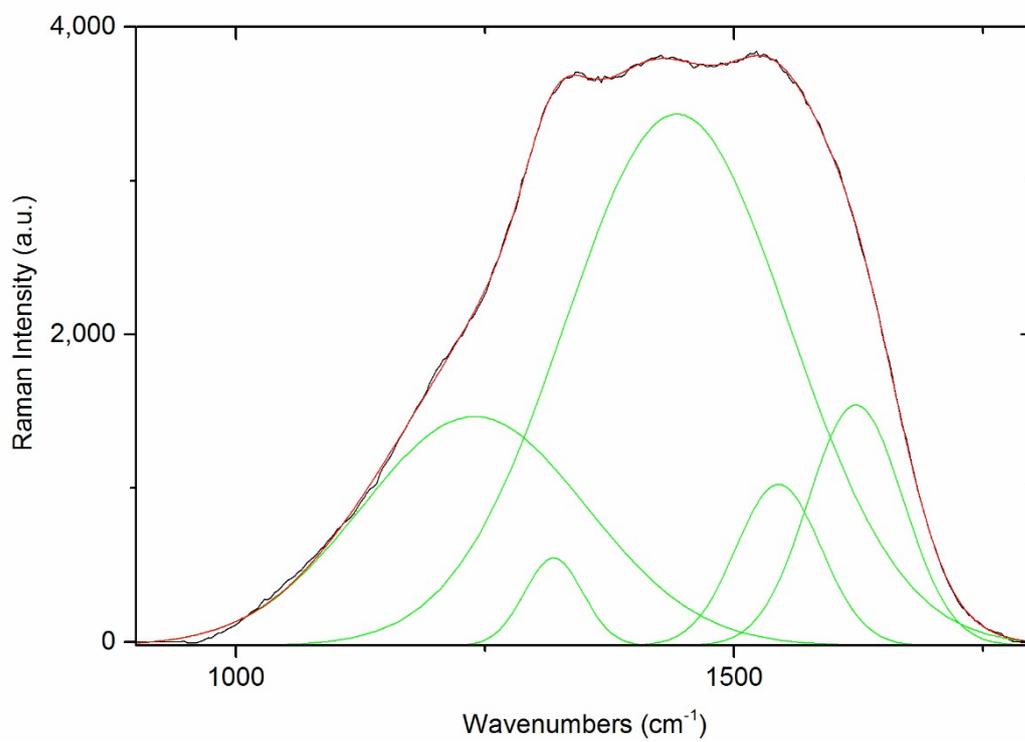


Figure S4 Deconvoluted part of Raman spectrum of **1-900**.

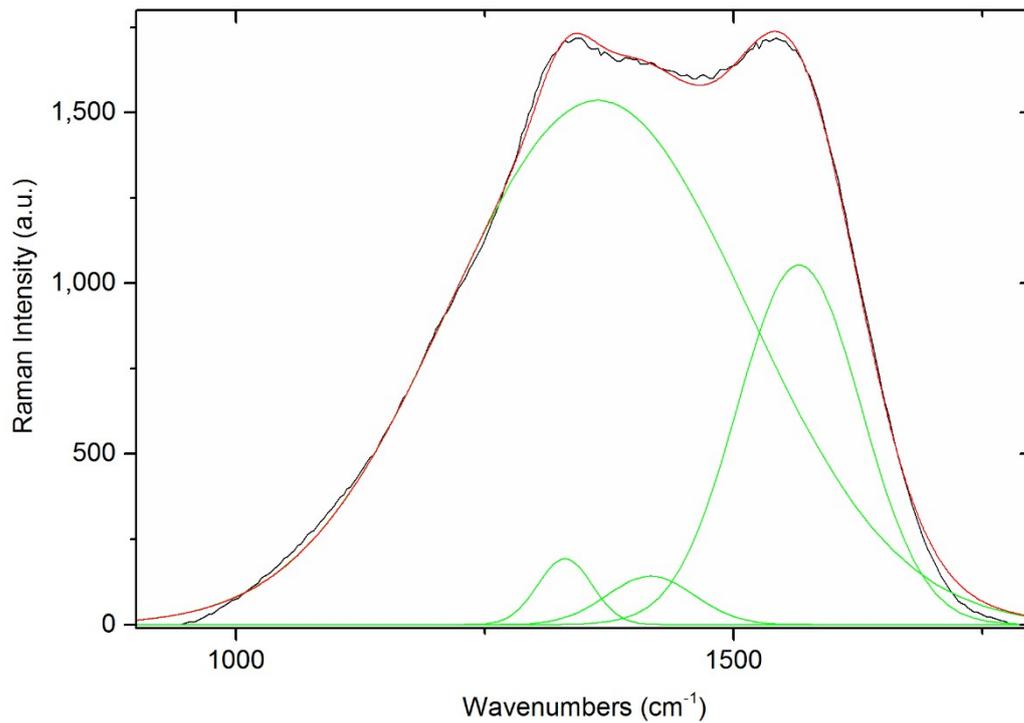


Figure S5 Deconvoluted part of Raman spectrum of **2-1050**.

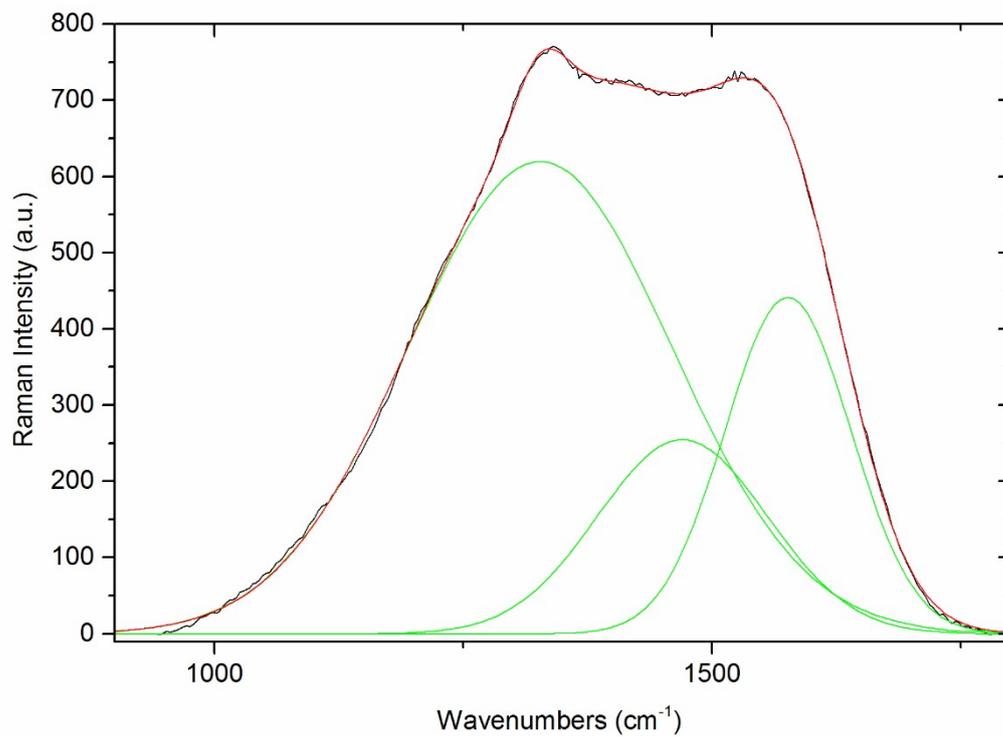


Figure S6 Deconvoluted part of Raman spectrum of **2-900**.

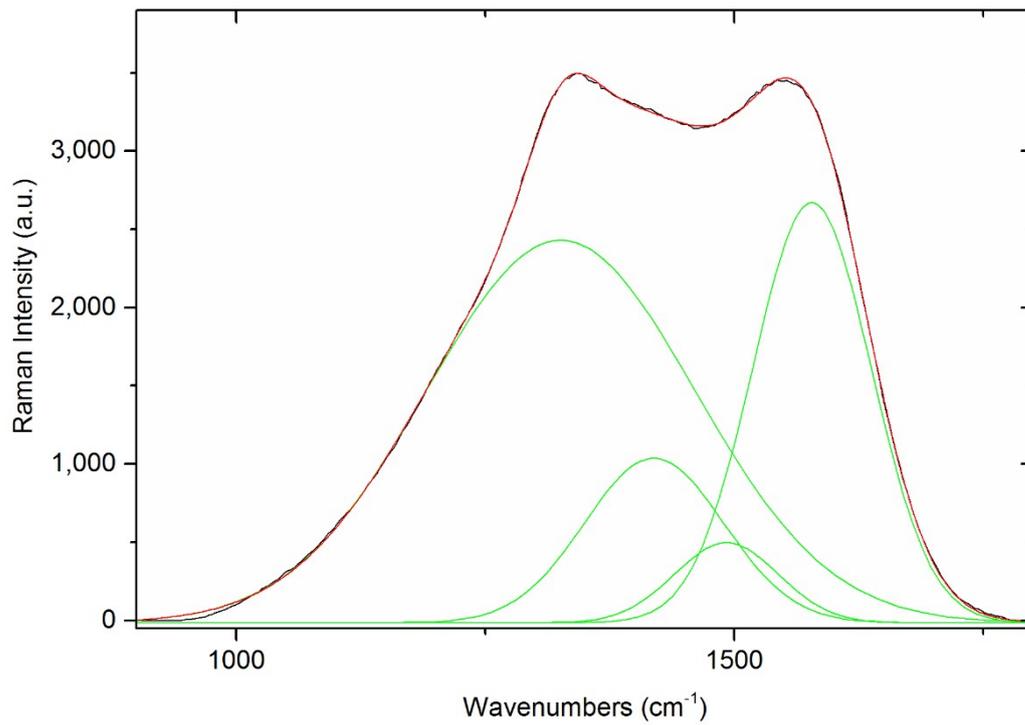


Figure S7 Deconvoluted part of Raman spectrum of **2-750**.

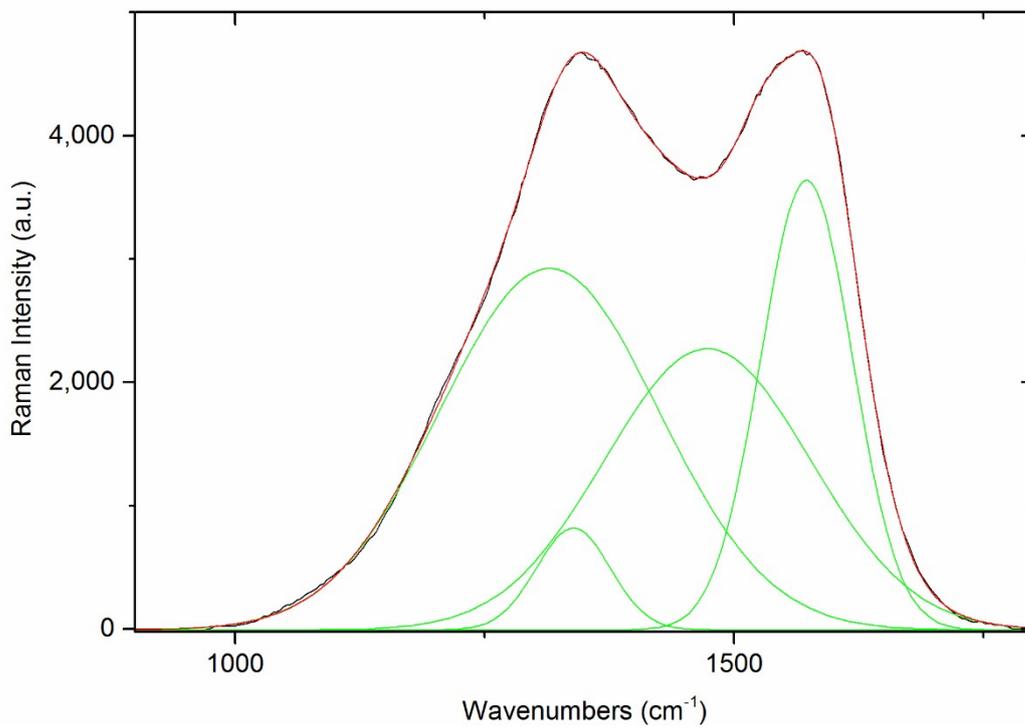


Figure S8 Deconvoluted part of Raman spectrum of **2-600**.

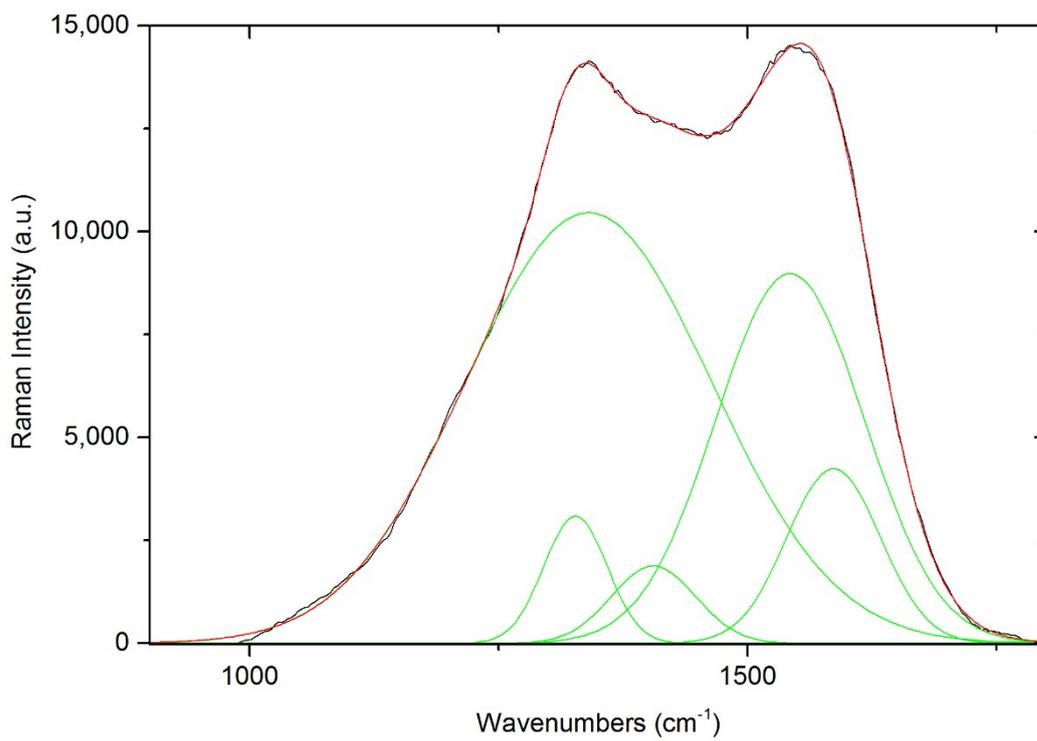


Figure S9 Deconvoluted part of Raman spectrum of **2-500**.

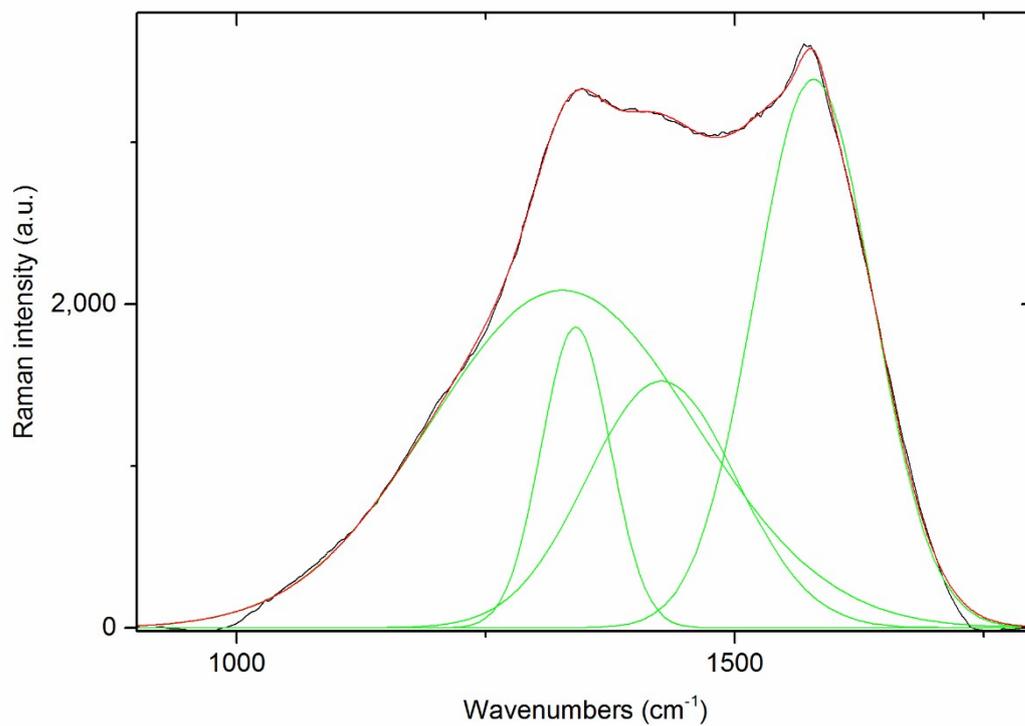


Figure S10 Deconvoluted part of Raman spectrum of **3-1050**.

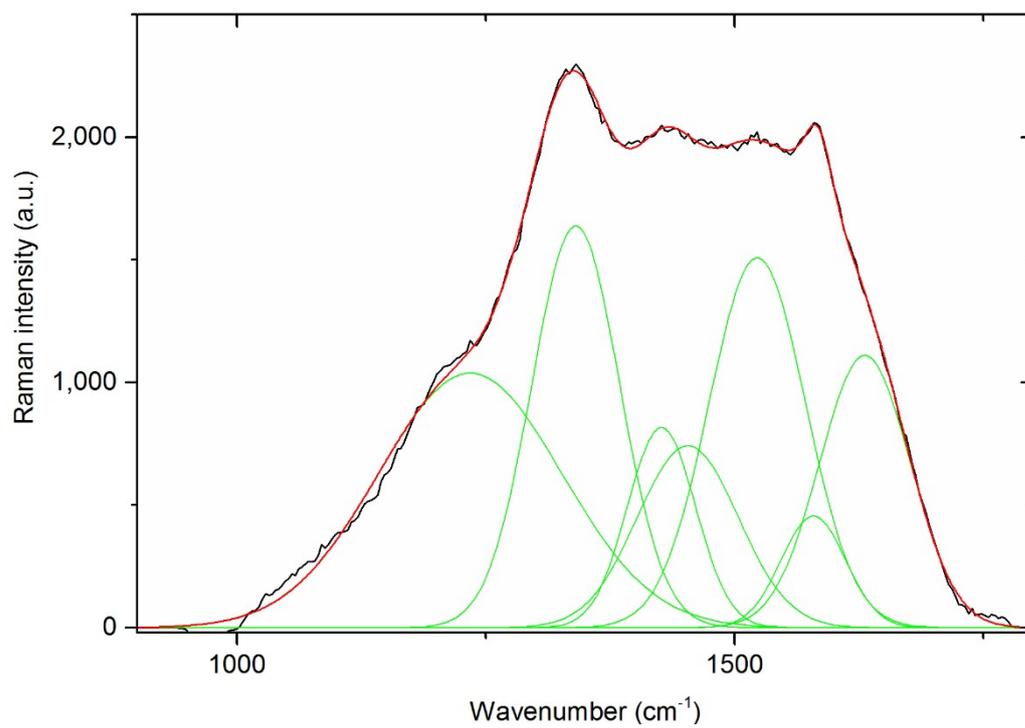


Figure S11 Deconvoluted part of Raman spectrum of **3-900**.

3. XPS spectra

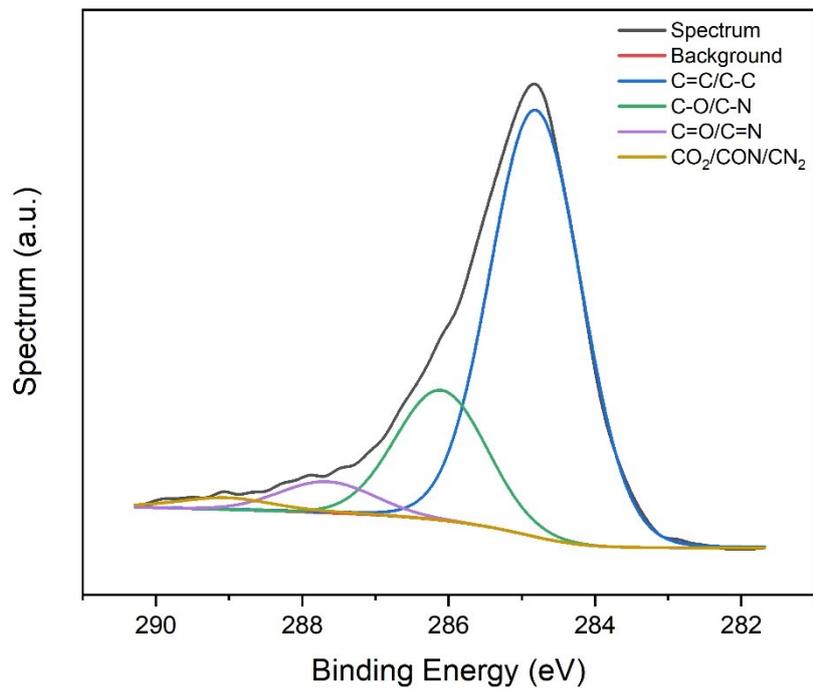


Figure S12 C 1s region of XPS spectrum of 1-1050.

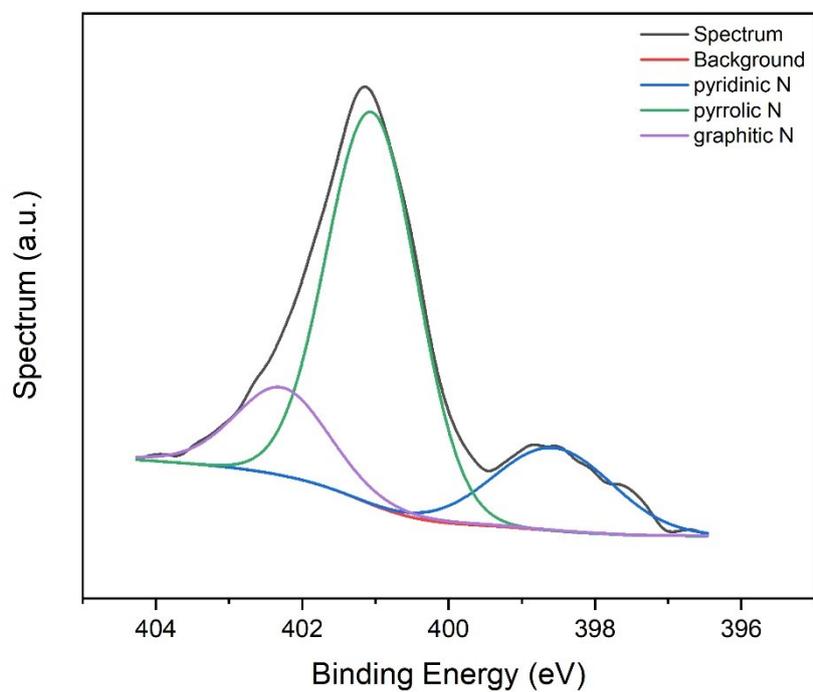


Figure S13 N 1s region XPS spectrum of 1-1050.

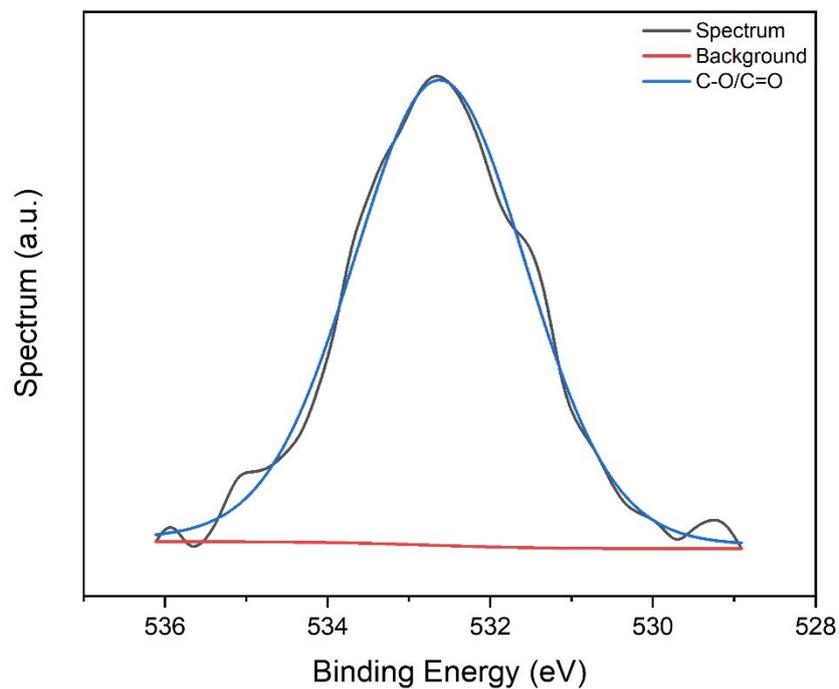


Figure S14 O 1s region of XPS spectrum of **1-1050**.

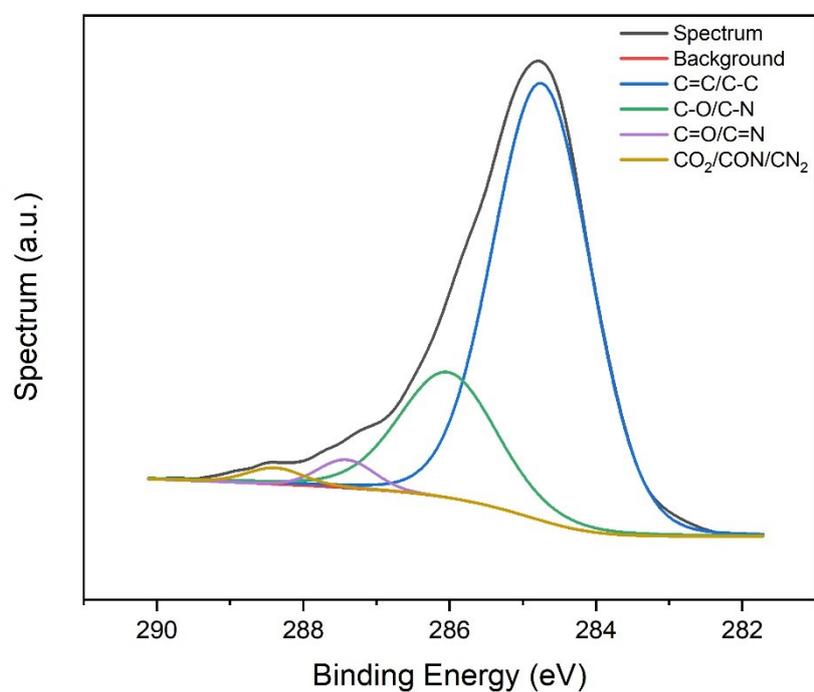


Figure S15 C 1s region of XPS spectrum of **1-900**.

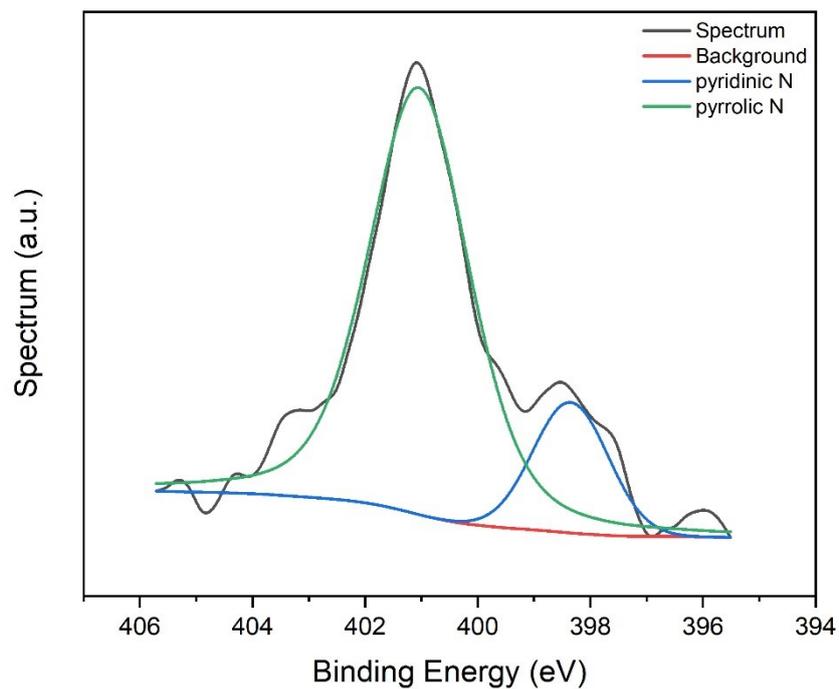


Figure S16 N 1s region of XPS spectrum of **1-900**.

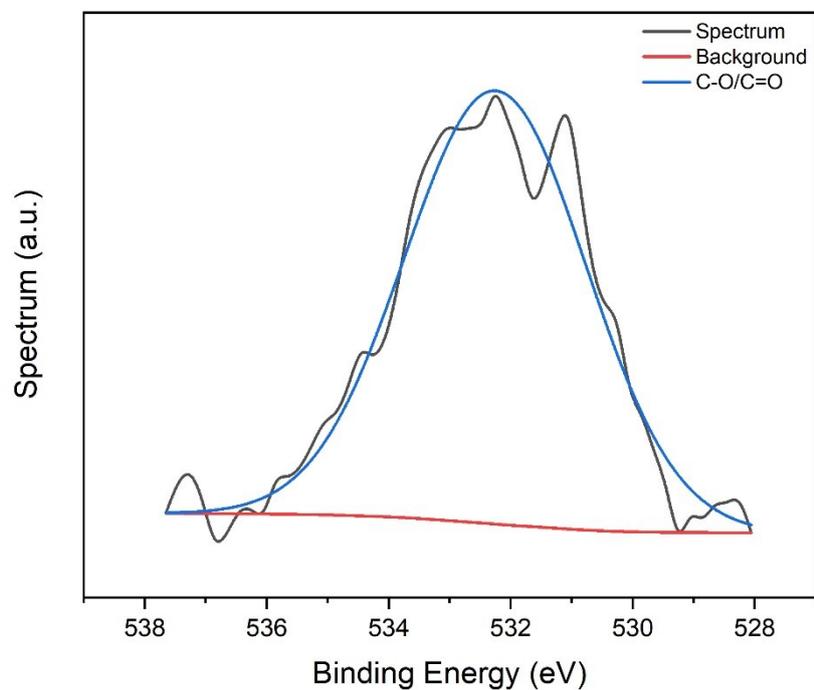


Figure S17 O 1s region of XPS spectrum of **1-900**.

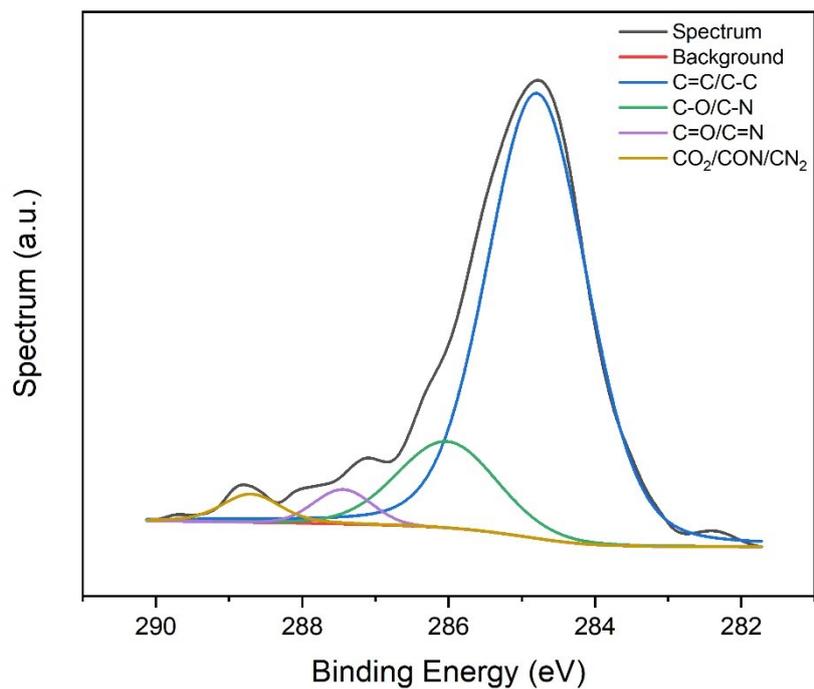


Figure S18 C 1s region of XPS spectrum of 1-750.

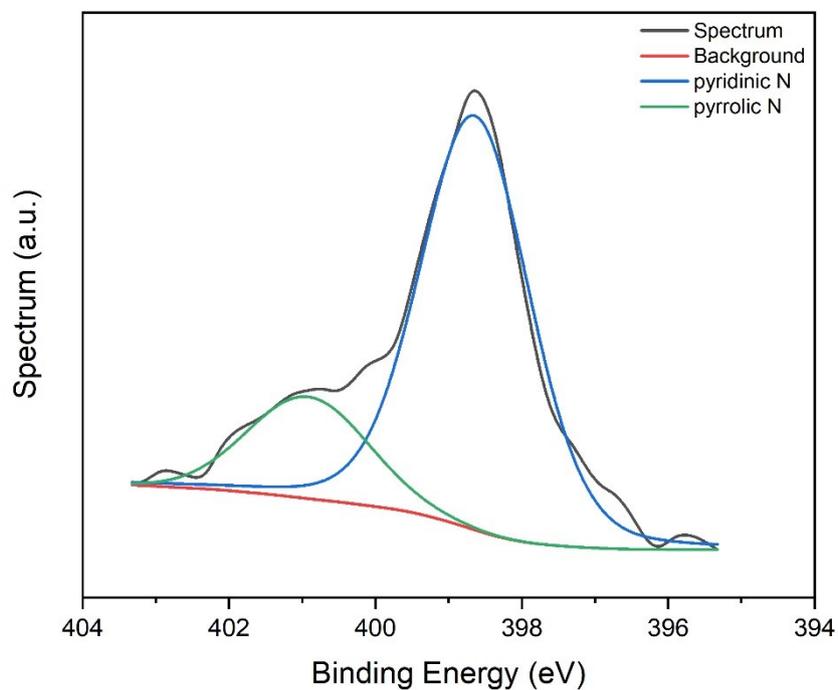


Figure S19 N 1s region of XPS spectrum of 1-750.

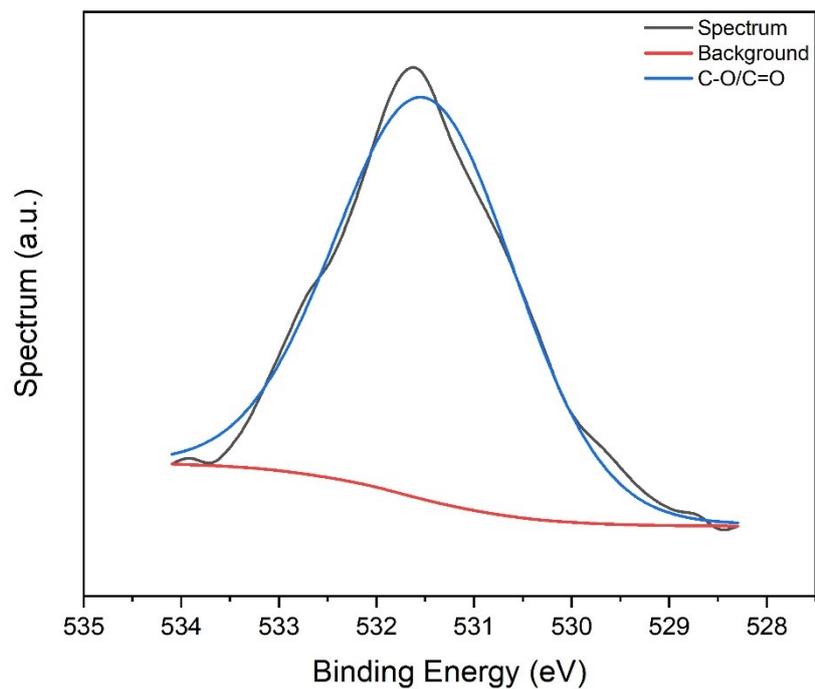


Figure S20 O 1s region of XPS spectrum of **1-750**.

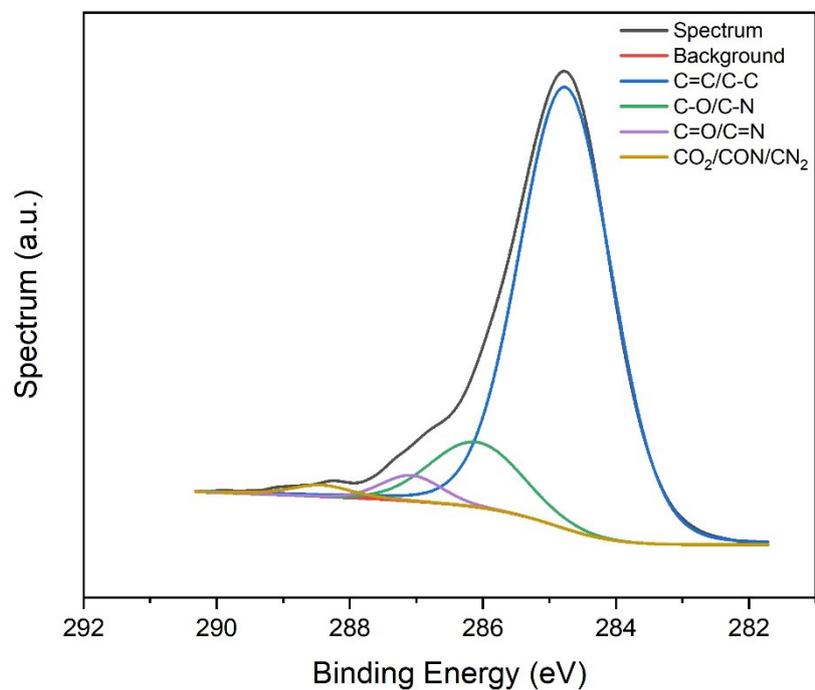


Figure S21 C 1s region of XPS spectrum of **2-1050**.

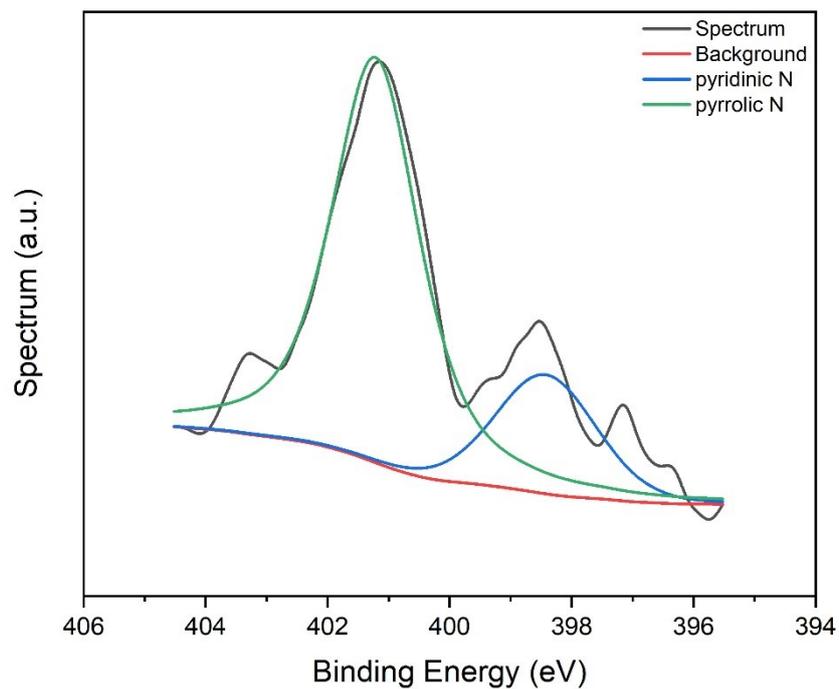


Figure S22 N 1s region of XPS spectrum of 2-1050.

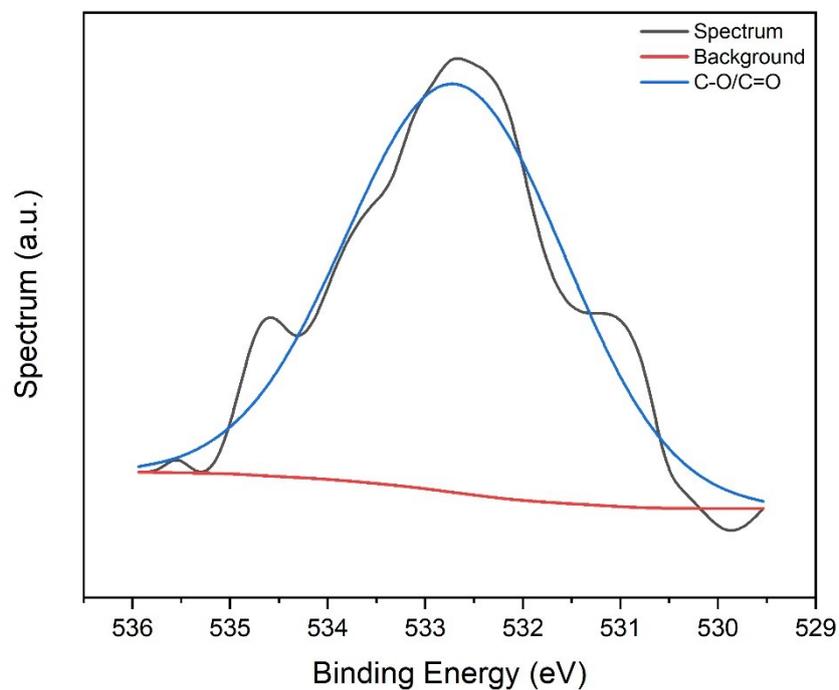


Figure S23 O 1s region of XPS spectrum of 2-1050.

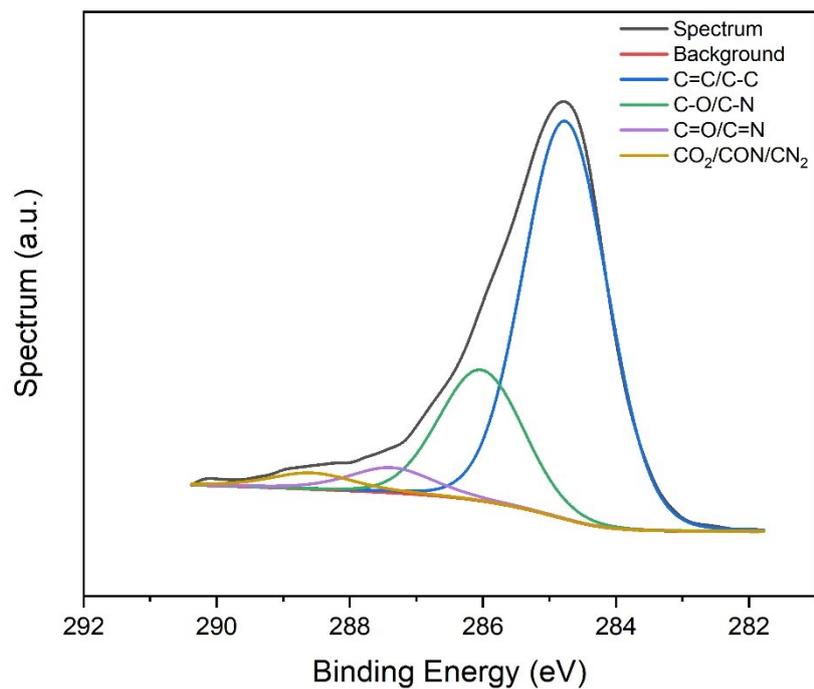


Figure S24 C 1s region of XPS spectrum of 2-900.

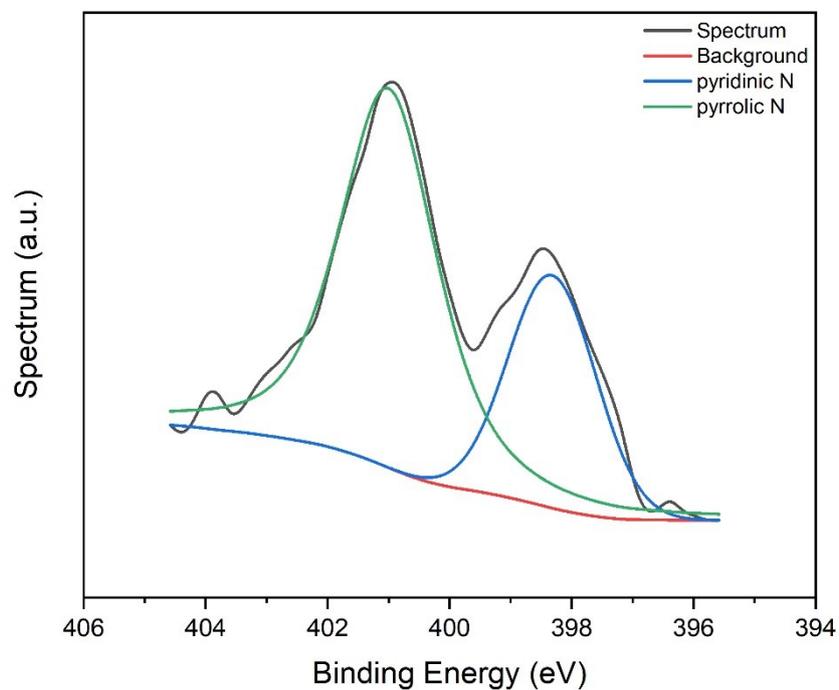


Figure S25 N 1s region of XPS spectrum of 2-900.

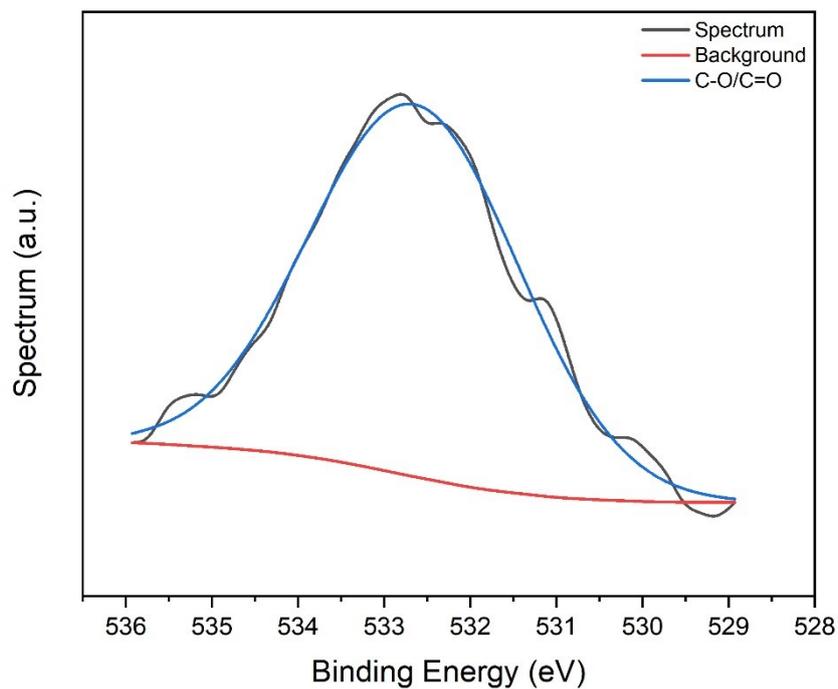


Figure S26 O 1s region of XPS spectrum of **2-900**.

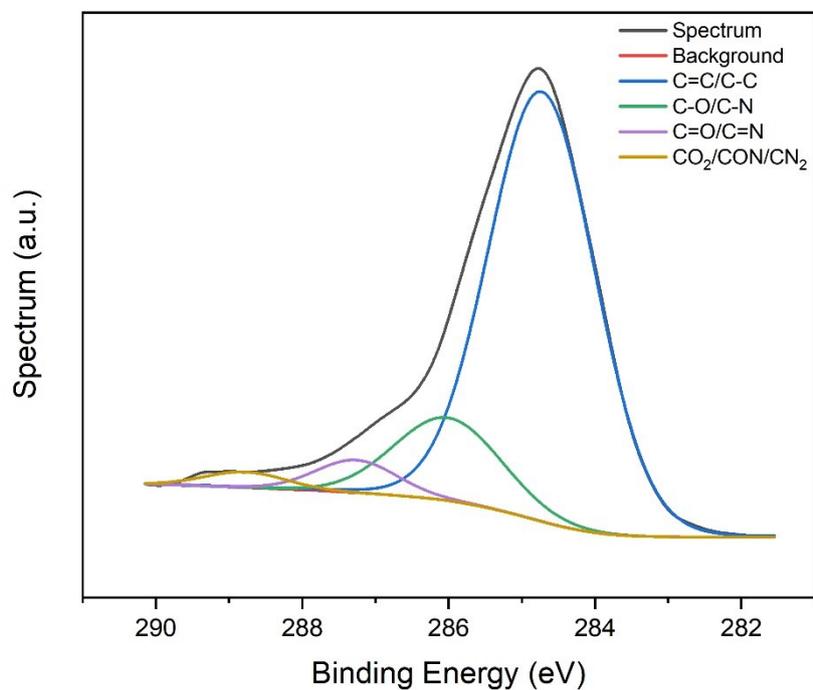


Figure S27 C 1s region of XPS spectrum of **2-750**.

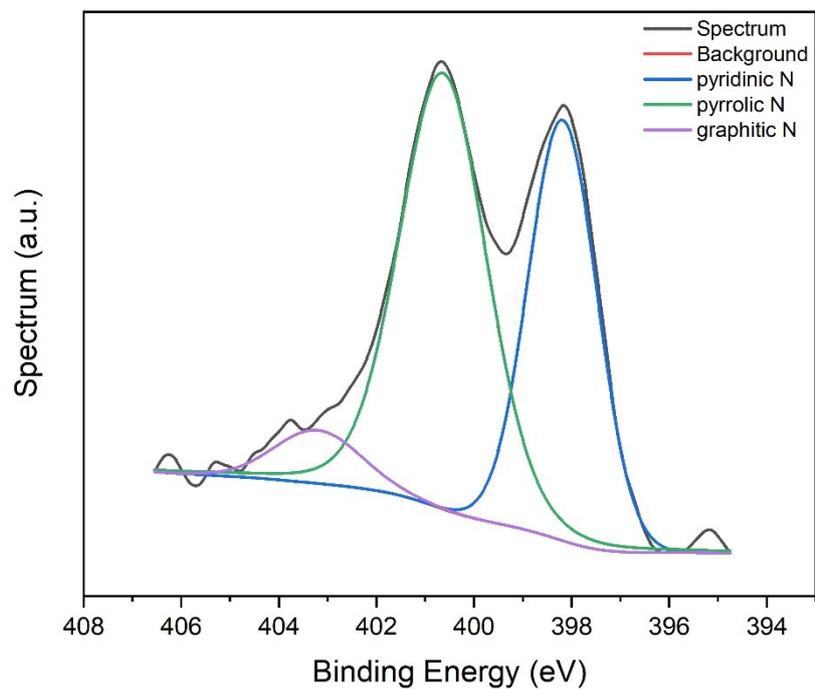


Figure S28 N 1s region of XPS spectrum of 2-750.

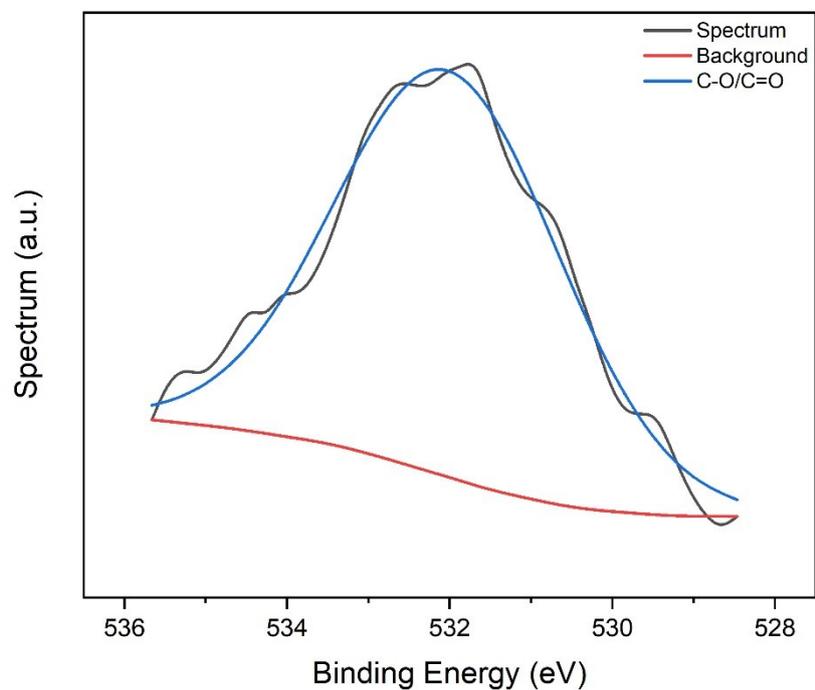


Figure S29 O 1s region of XPS spectrum of 2-750.

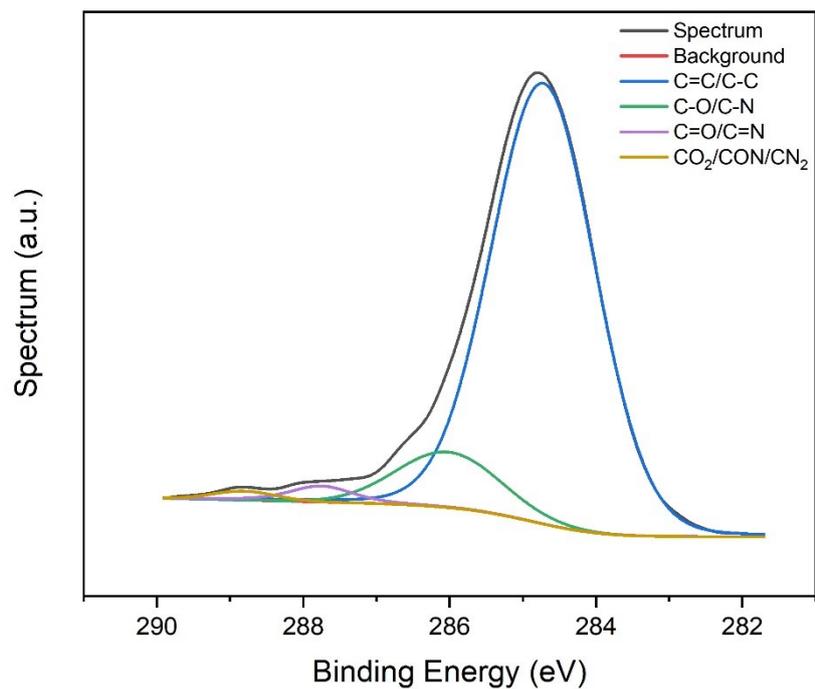


Figure S30 C 1s region of XPS spectrum of 2-600.

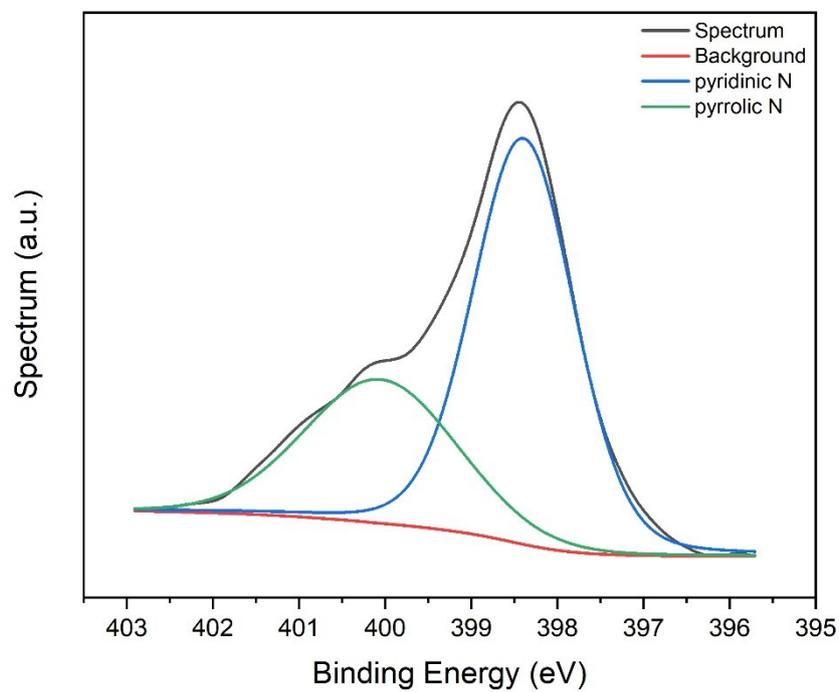


Figure S31 N 1s region of XPS spectrum of 2-600.

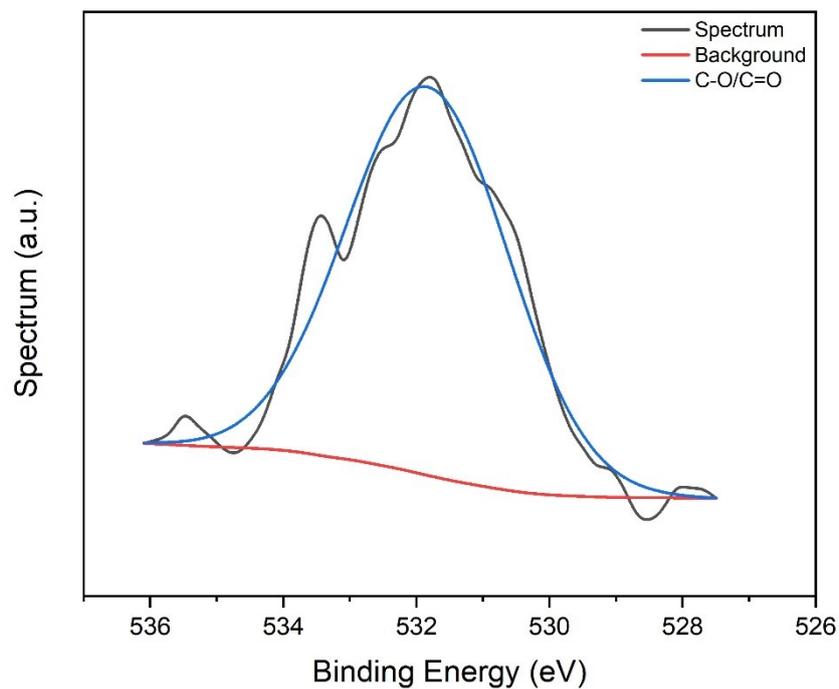


Figure S32 O 1s region of XPS spectrum of **2-600**.

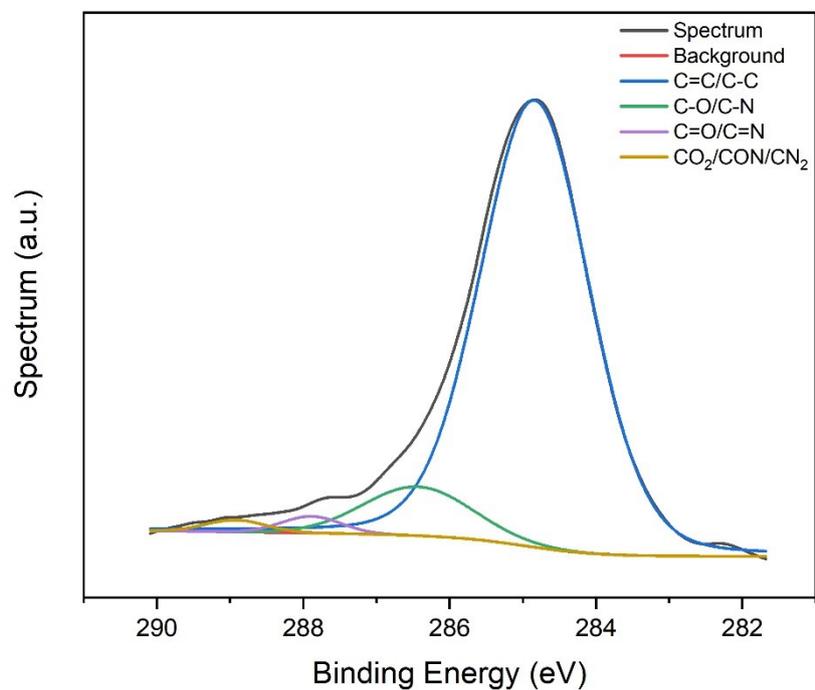


Figure S33 C 1s region of XPS spectrum of **2-500**.

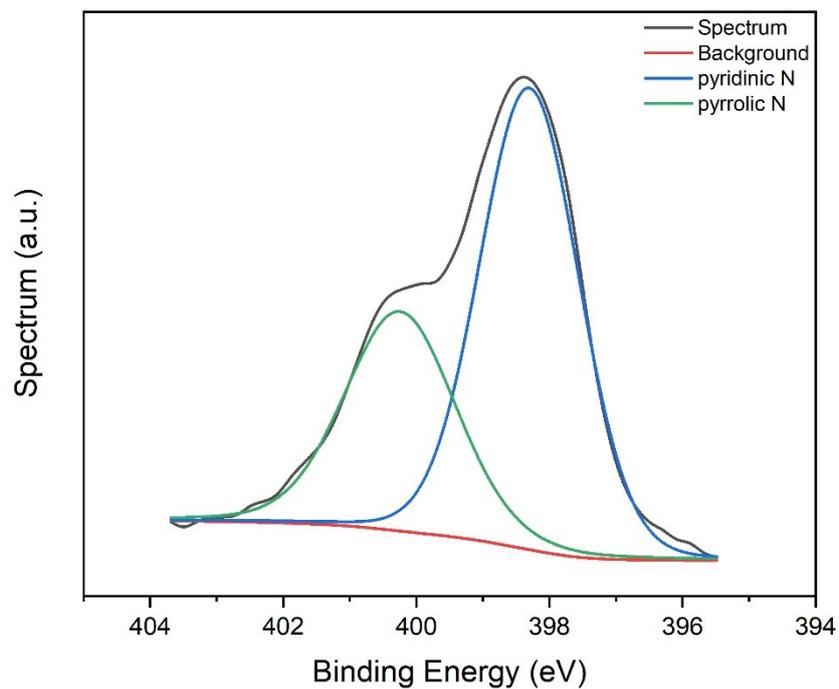


Figure S34 N 1s region of XPS spectrum of **2-500**.

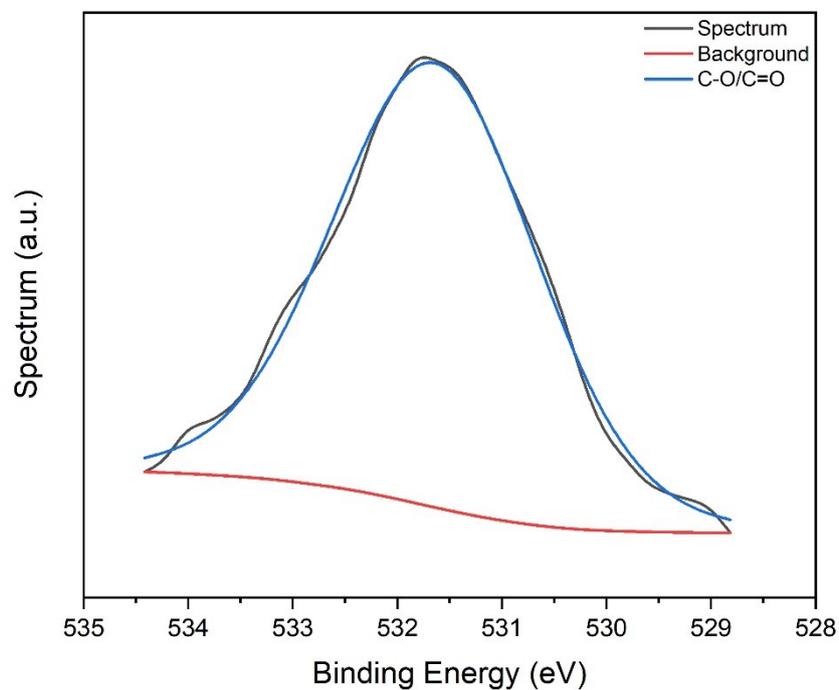


Figure S35 O 1s region of XPS spectrum of **2-500**.

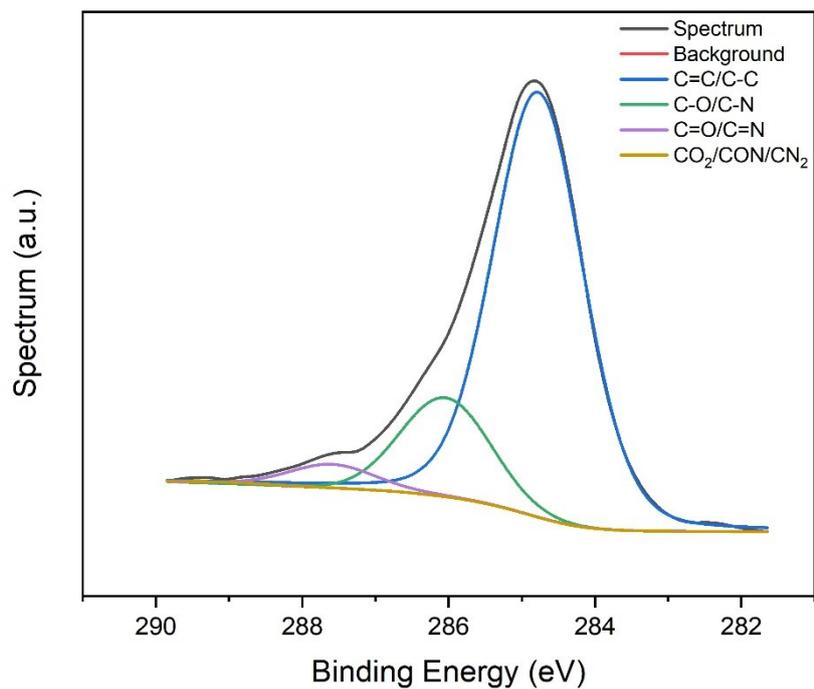


Figure 36 C 1s region of XPS spectrum of 3-1050.

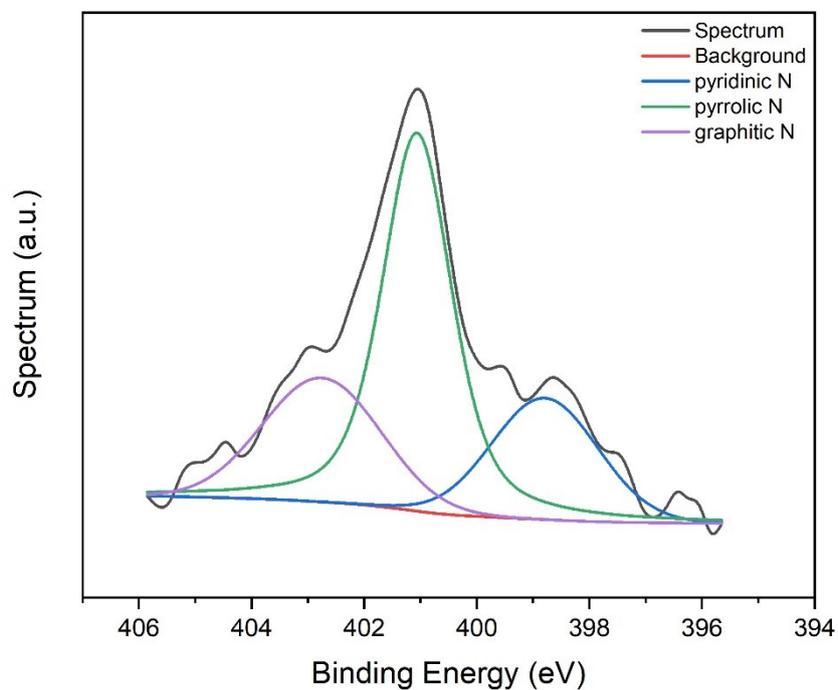


Figure S37 N 1s region of XPS spectrum of 3-1050.

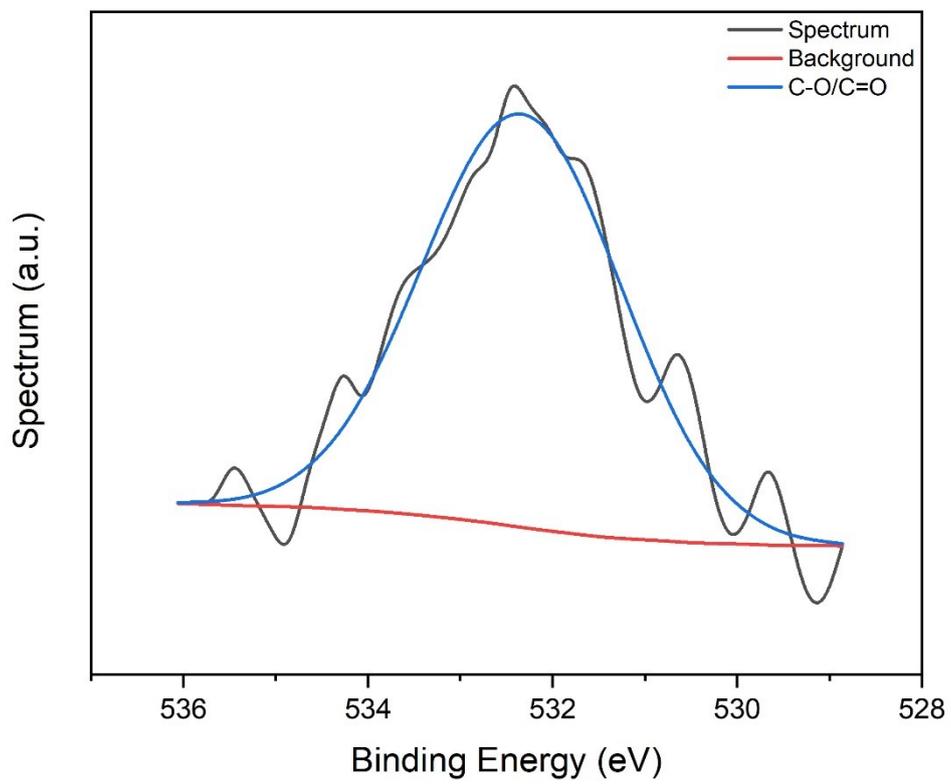


Figure S38 O 1s region of XPS spectrum of **3-1050**.

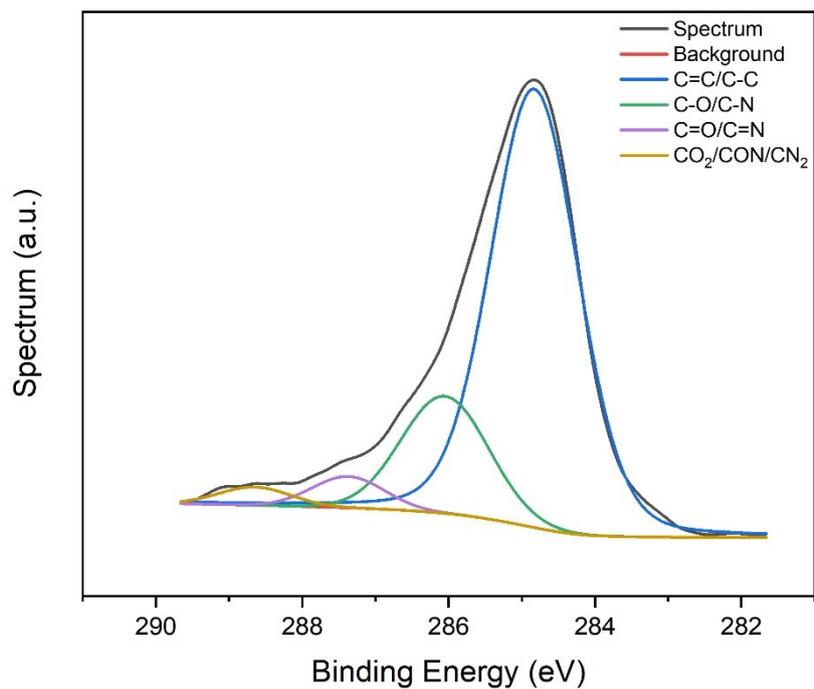


Figure S39 C 1s region of XPS spectrum of 3-900.

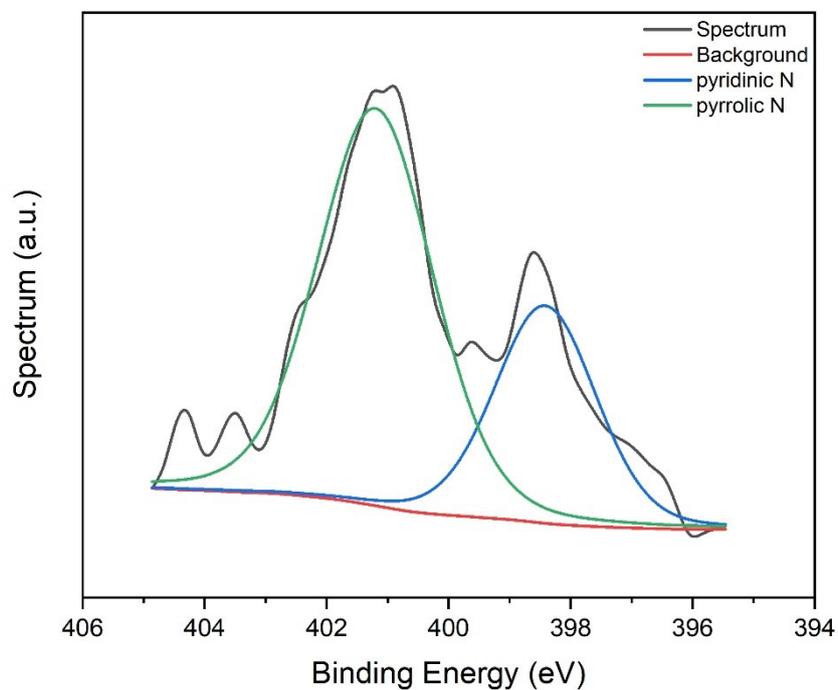


Figure S40 N 1s region of XPS spectrum of 3-900.

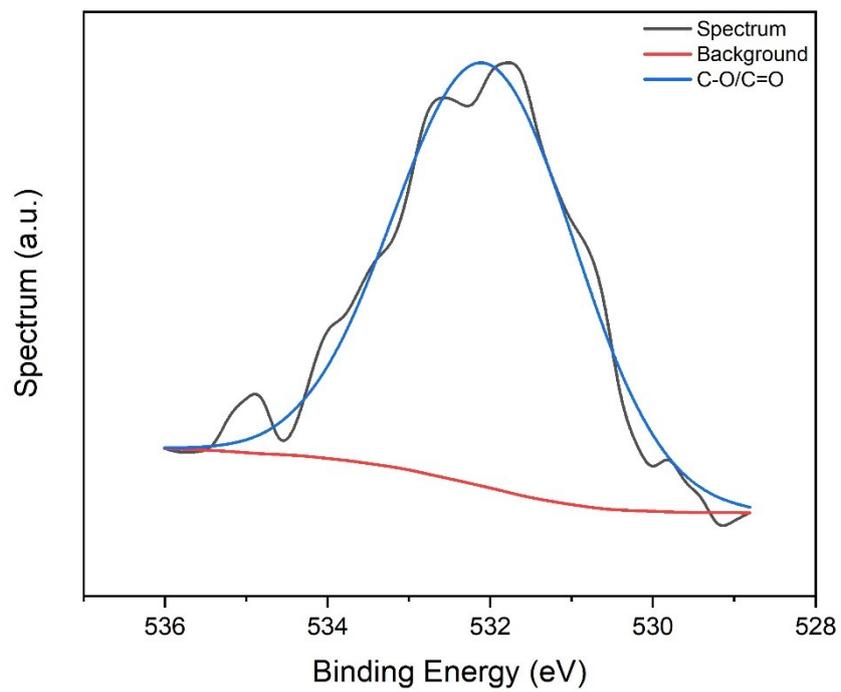


Figure S41 O 1s region of XPS spectrum of **3-900**.

4. AFM images

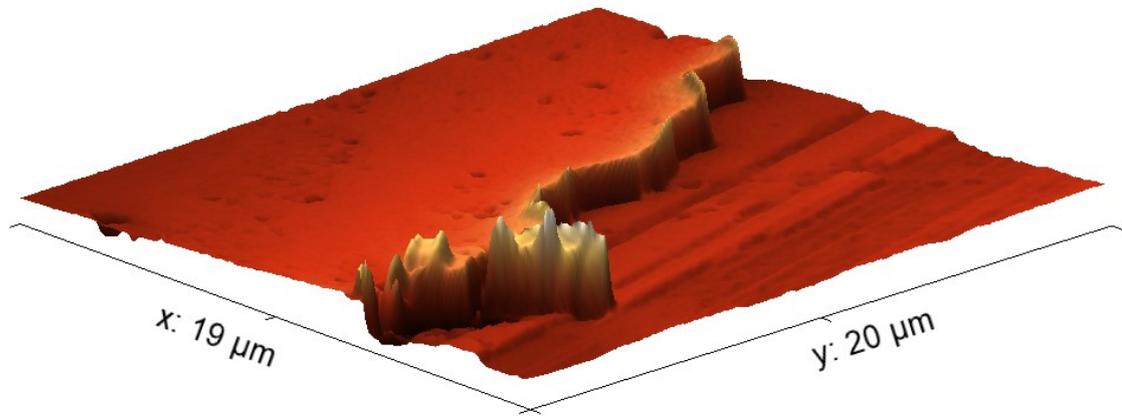


Figure S42 AFM landscape of 1-1050.

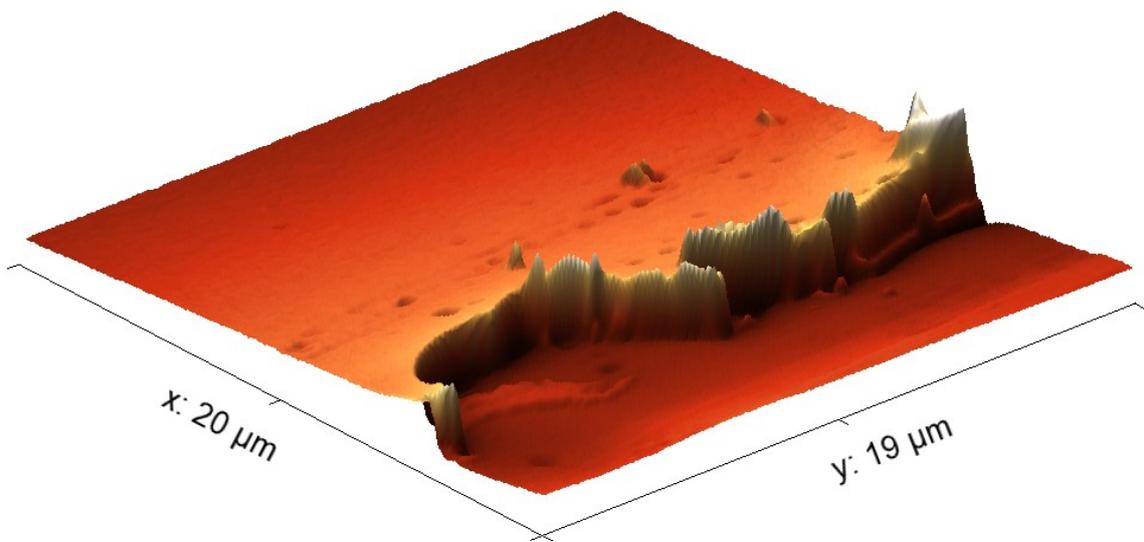


Figure S43 AFM landscape of 2-900.

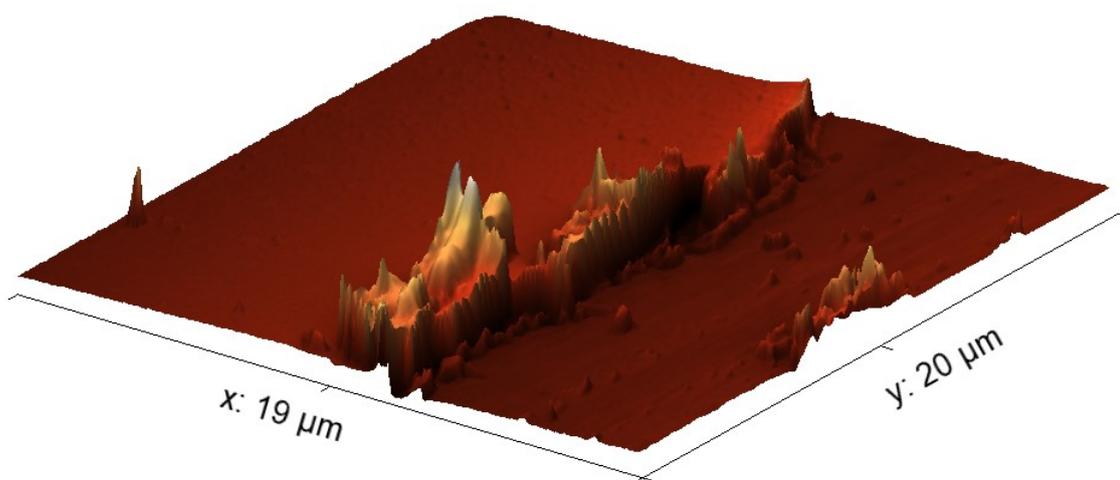


Figure 44 AFM landscape of 3-1050.

5. STEM images

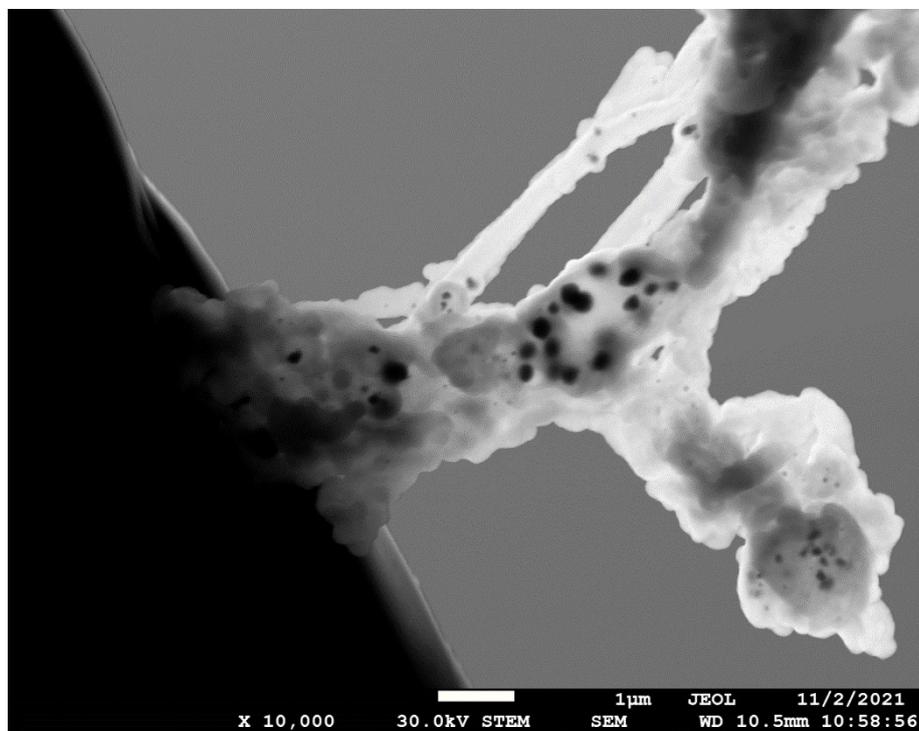


Figure S45 „Macroscopic“ detail of nano-mousse formation in 1-1050a.

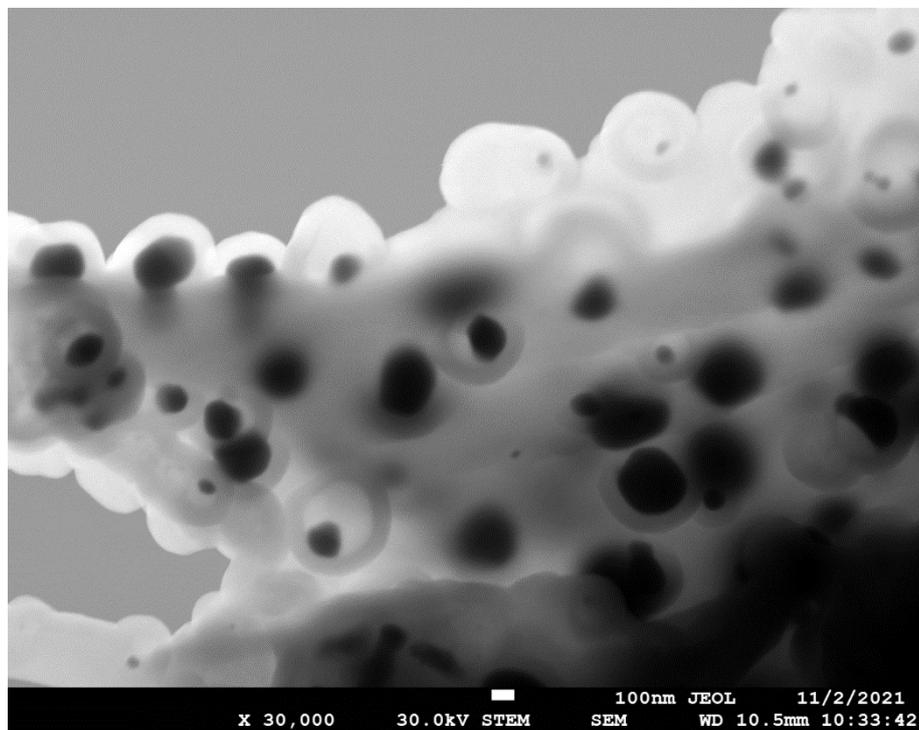


Figure S46 System of interconnected multi-layer carbon spheres in 1-1050a.

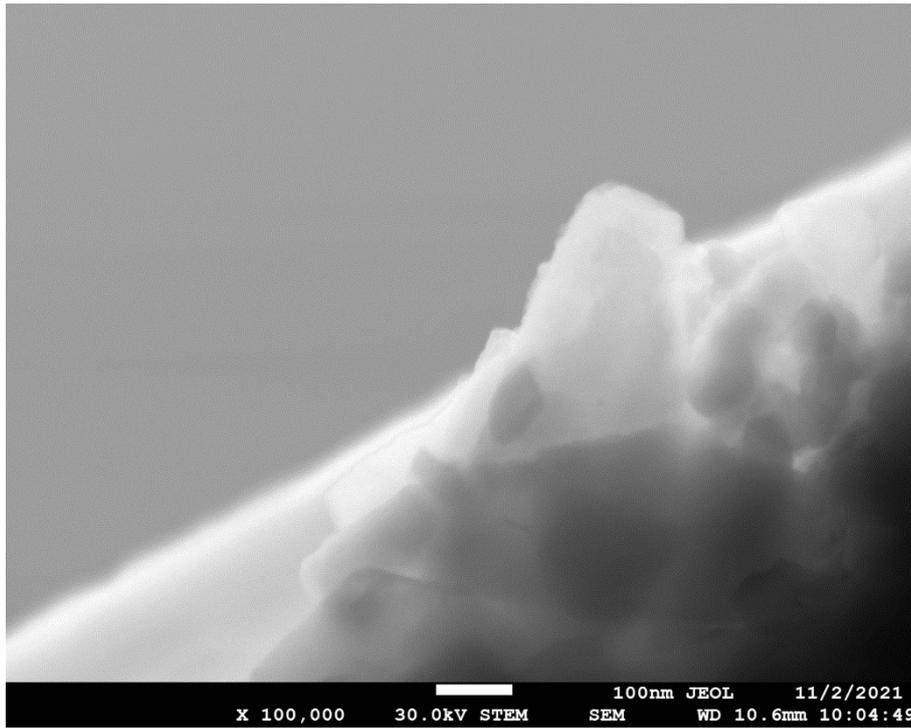


Figure S47 Attempted STEM high-resolution detail of the surface of nano-spheres in **1-1050a**.

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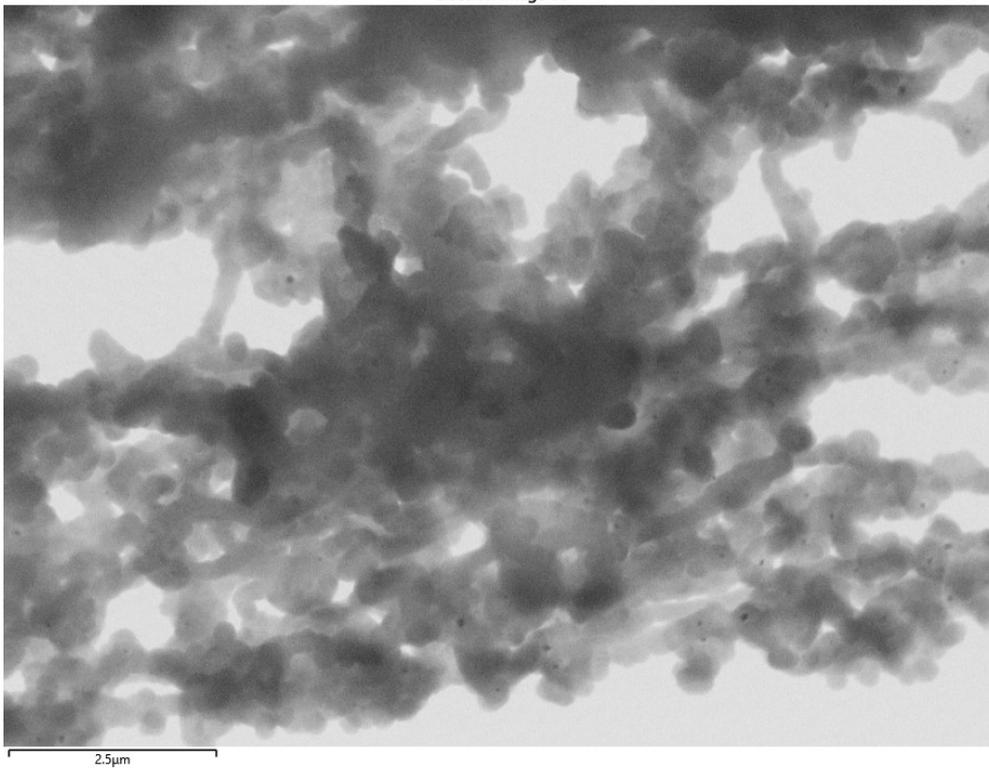


Figure S48 Web of nano-mousse found in **2-900a**.

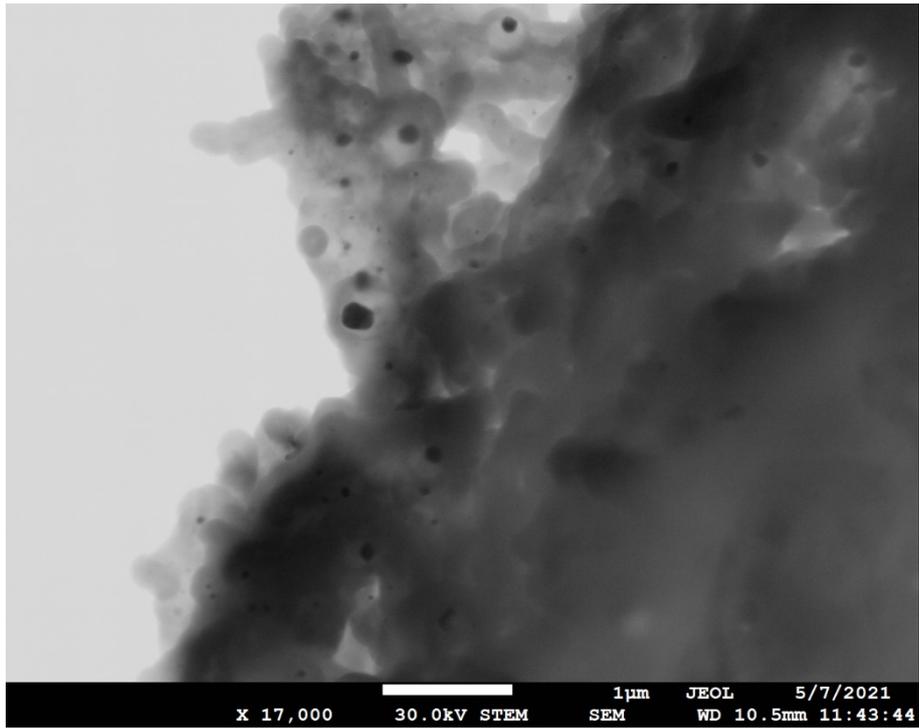


Figure S49 Detail of the web of nano-mousse found in **2-900a**.

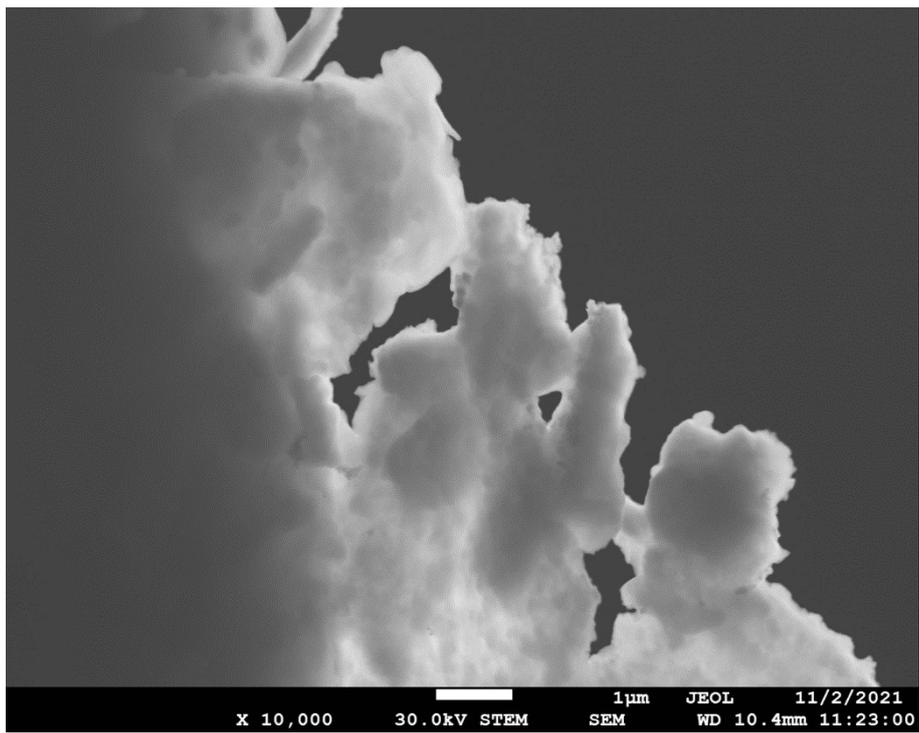


Figure 50 Formations of nano-mousse in **3-1050a** in lower resolution.

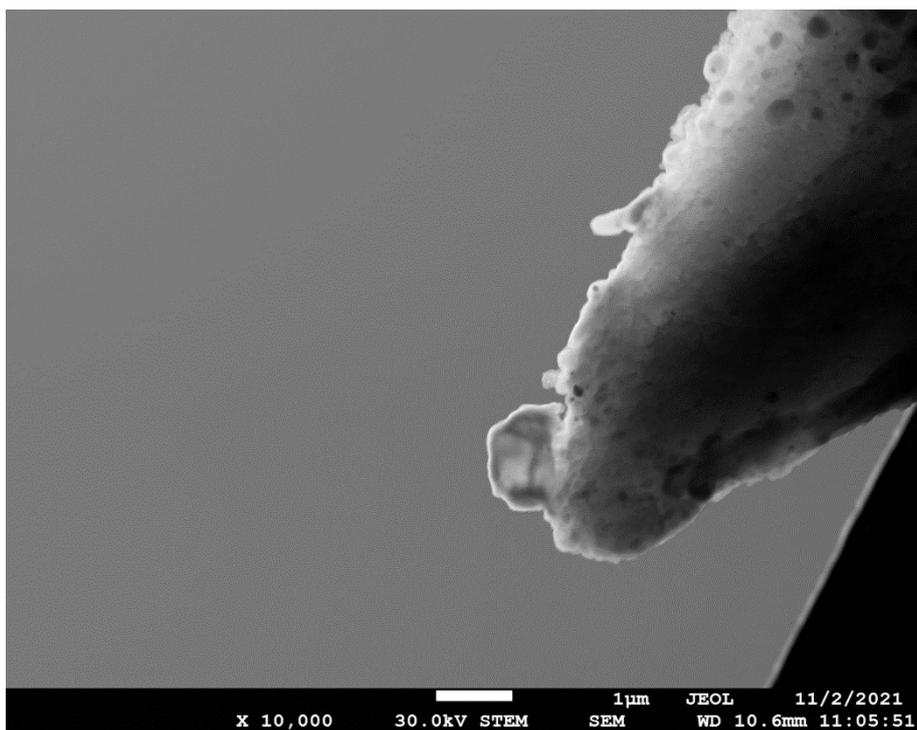


Figure S51 Detail of nano-mousse formation in 3-1050a.

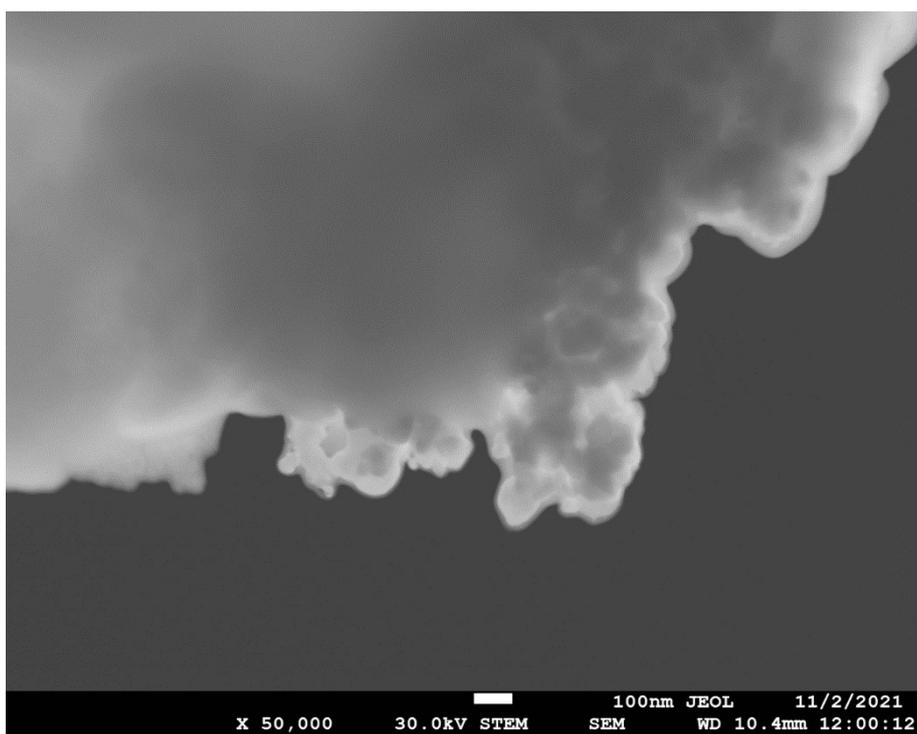


Figure S52 Attempted high-resolution detail of nano-mousse 3-1050a on the edge of a formation (nano-mousse character still visible).

6. HR-TEM proceedings

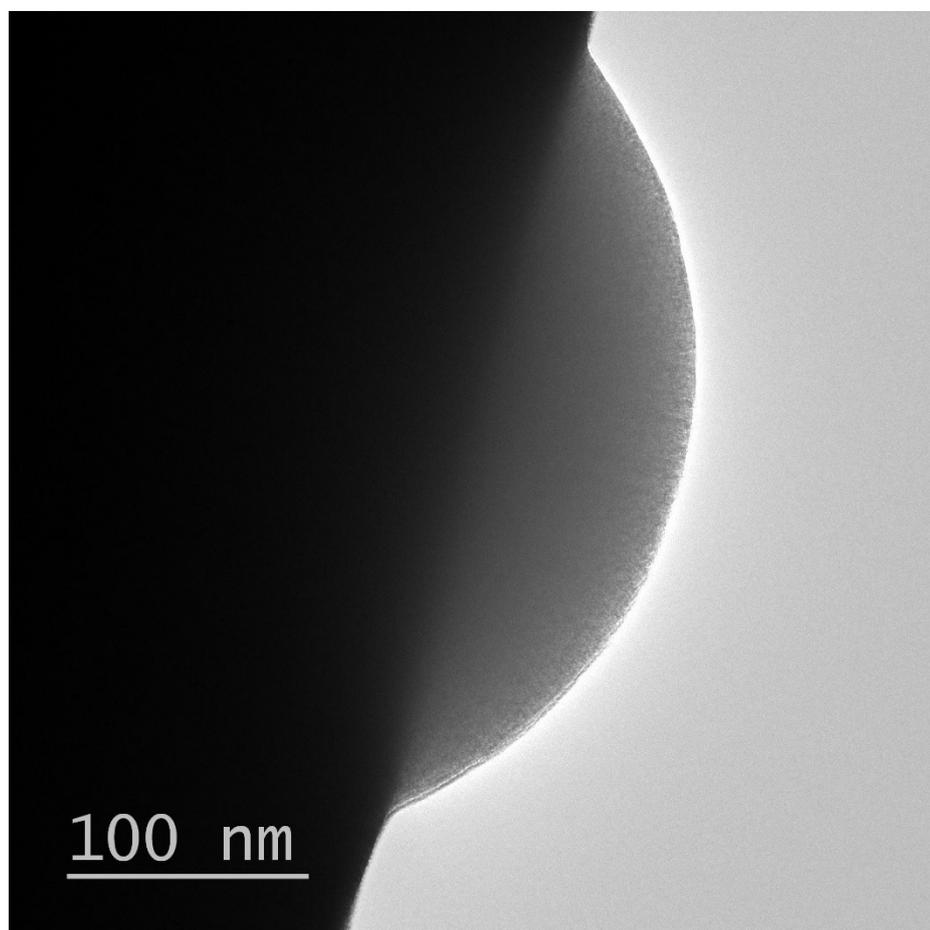


Figure S53 Part of an individual sphere found in **1-1050a**.

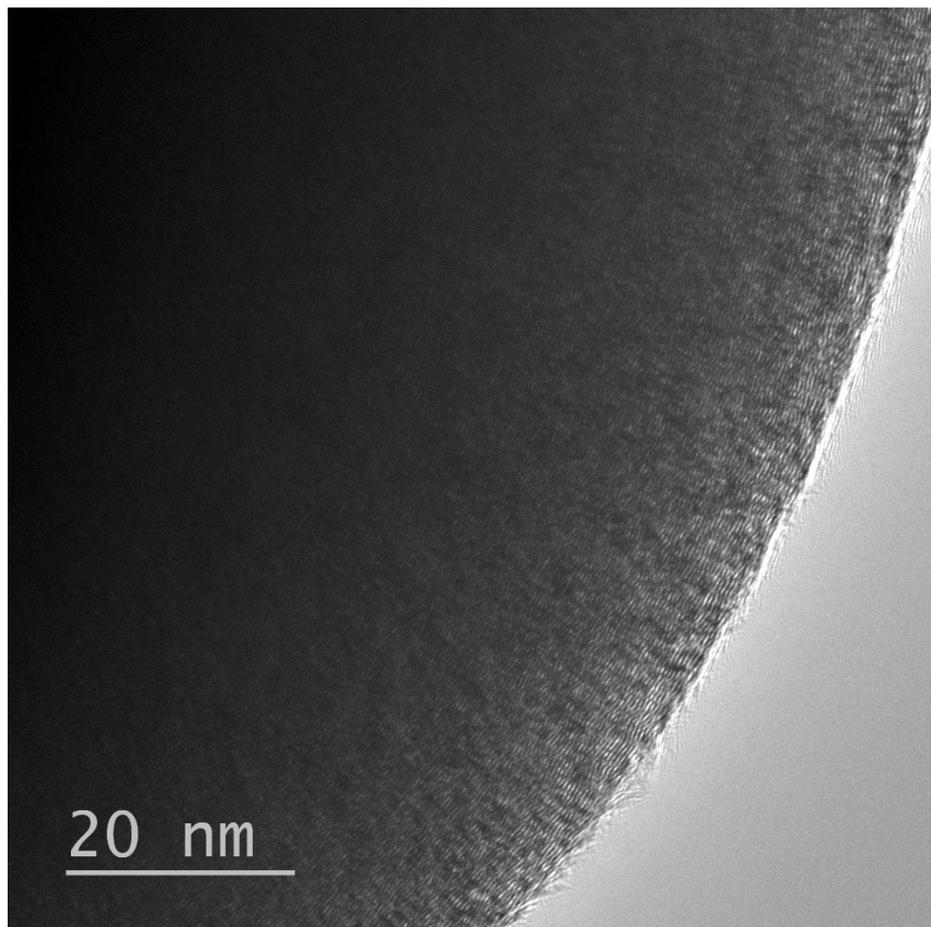


Figure S54 Multiwall character of **1-1050a**.

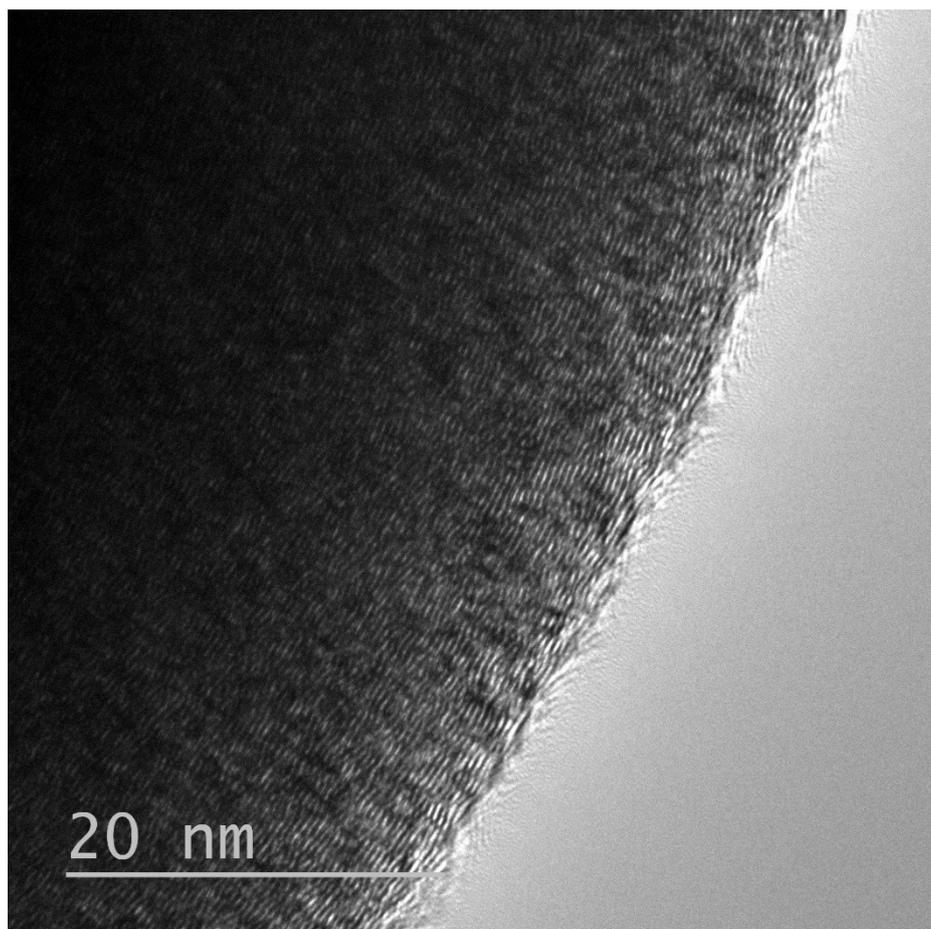


Figure S55 Stacked rounded multi-wall carbon honeycombs on the surface of a sphere in **1-1050a**.

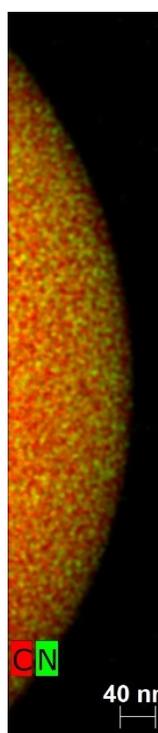


Figure S56 EDS map of **1-1050a** individual sphere.

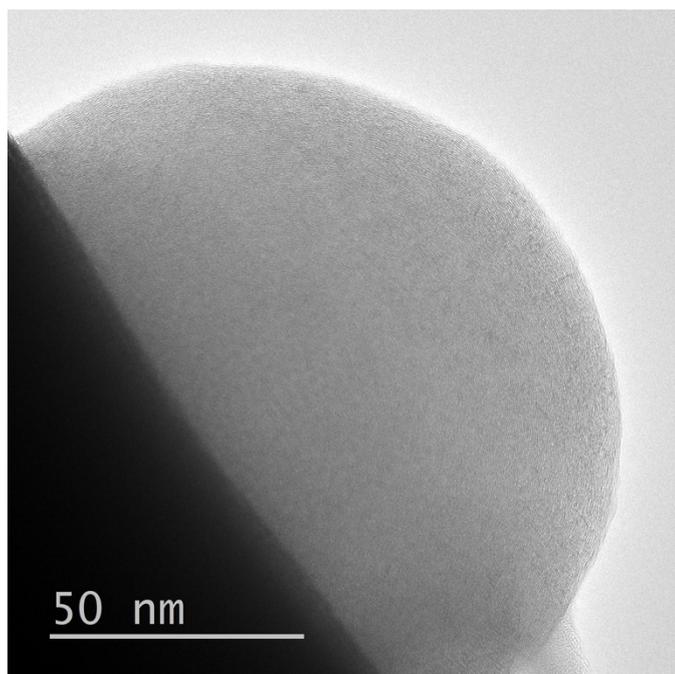


Figure S57 Individual sphere of **2-1050a**.

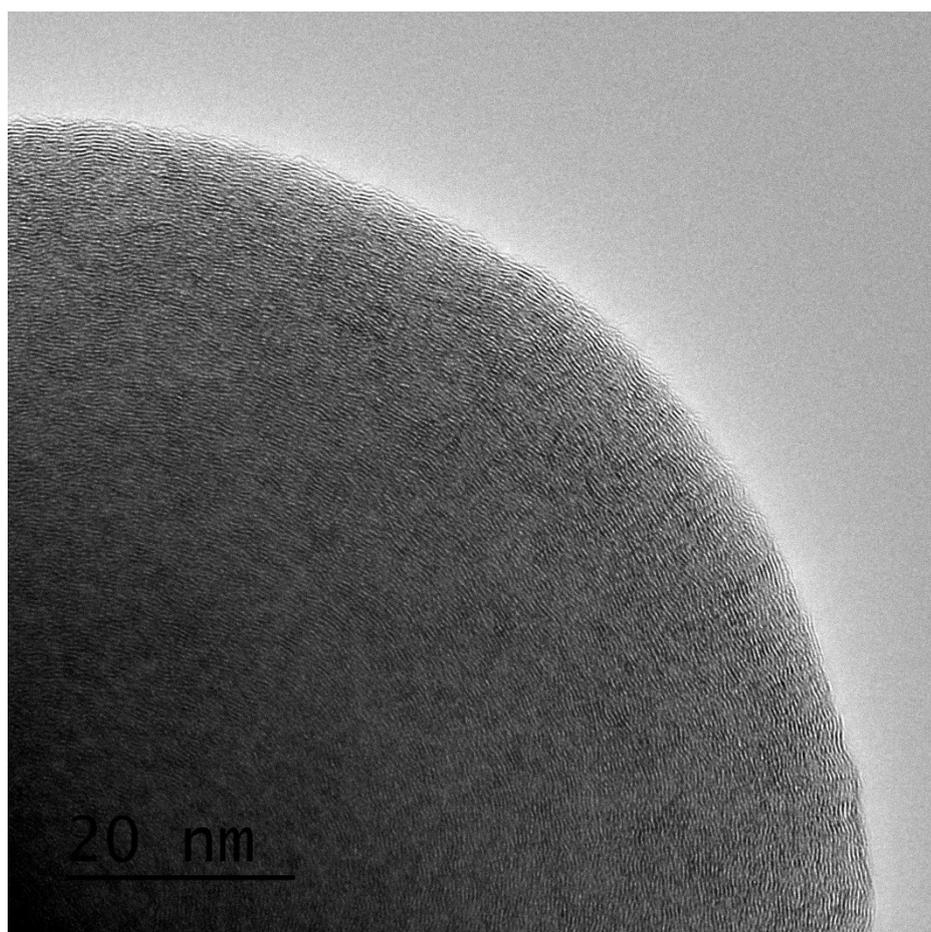


Figure S58 Multi-wall character of an individual sphere in **2-1050a**.

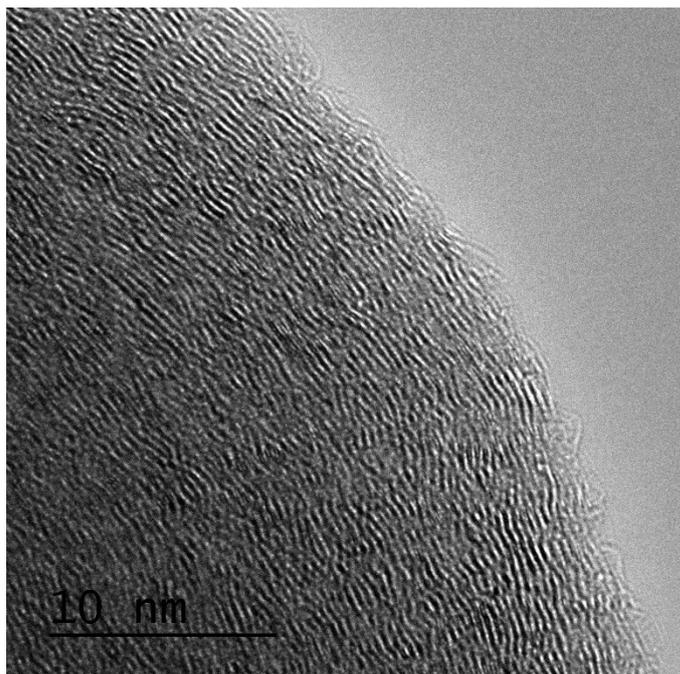


Figure S59 Detail of multi-wall character of an individual sphere in **2-1050a**.

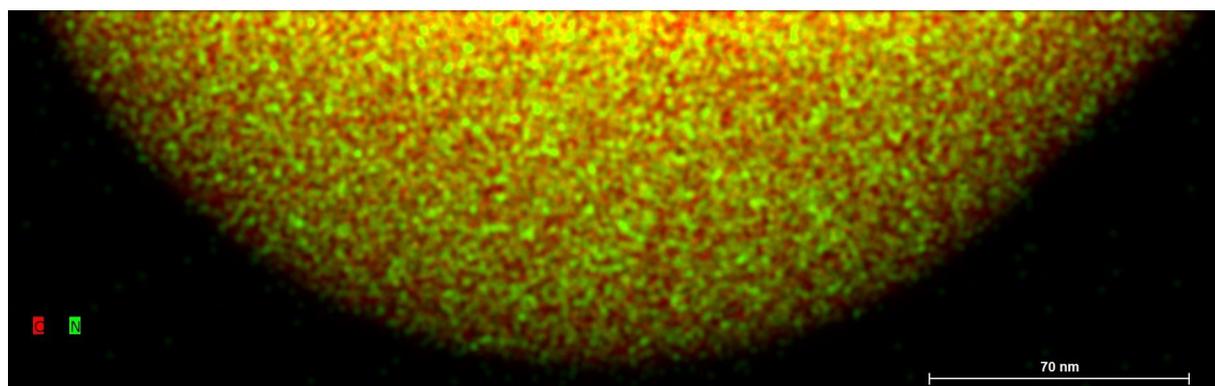


Figure S60 C/N EDS map of an individual sphere in **2-1050a**.

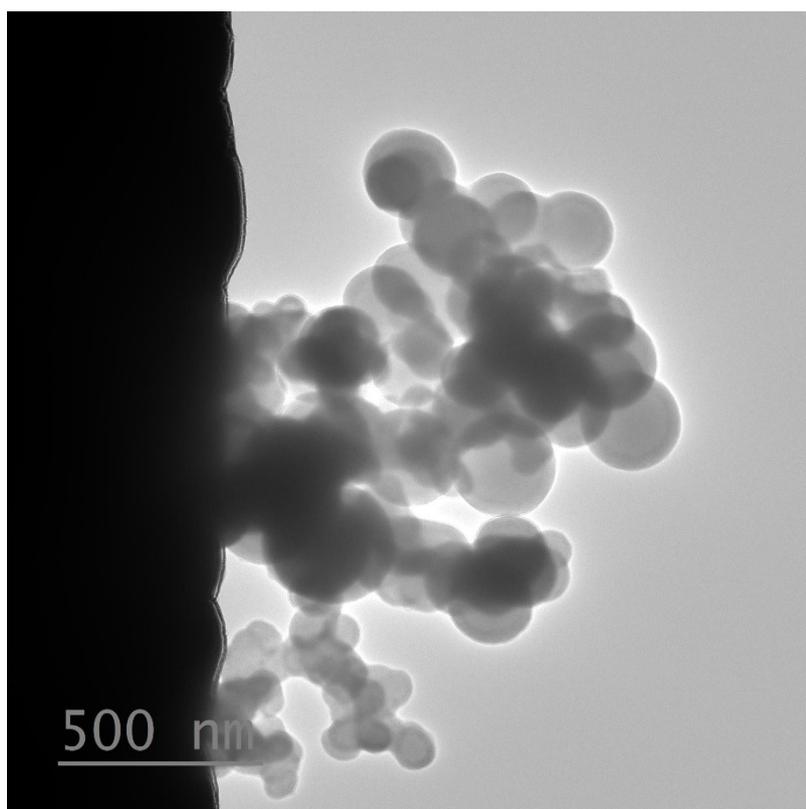


Figure S61 Nano-mousse nanoformation in **2-500a**.

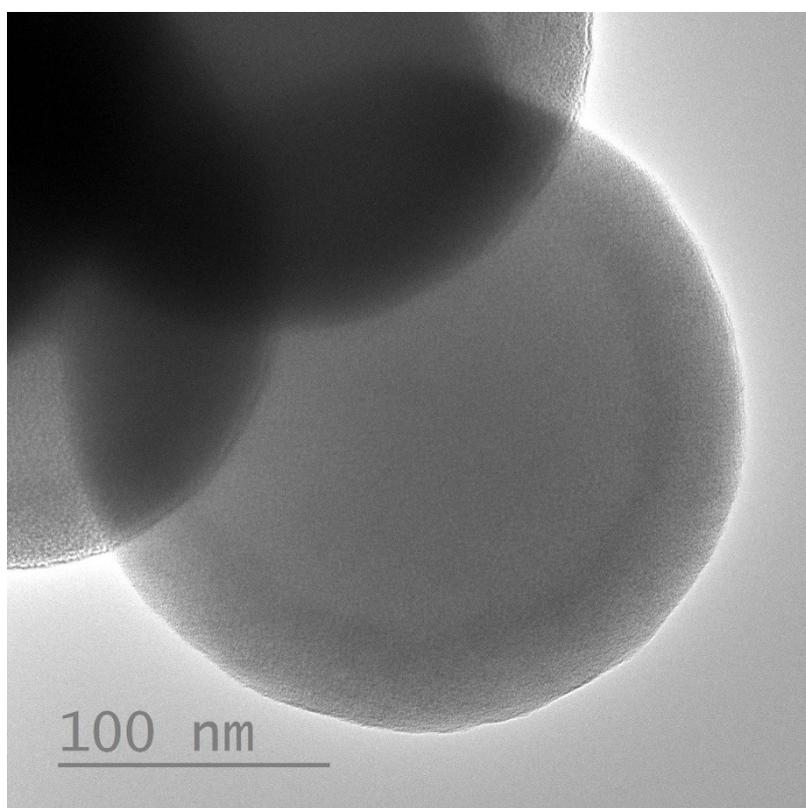


Figure S62 Individual sphere in **2-500a**, the multi-wall nanosphere character quite visible here.

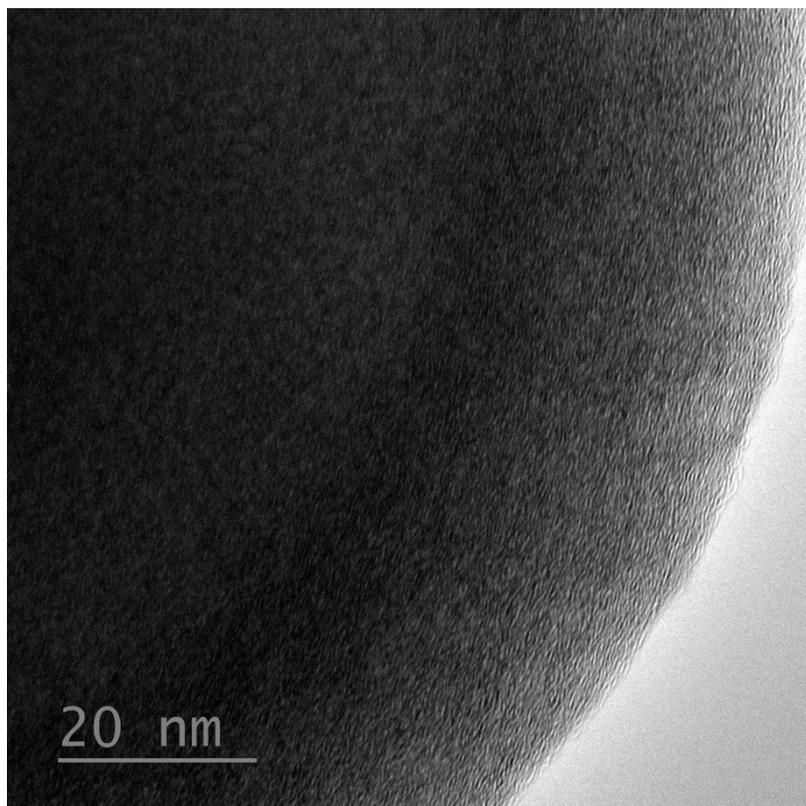


Figure S63 Detail of surface of nano-mousse sphere of **2-500a**.

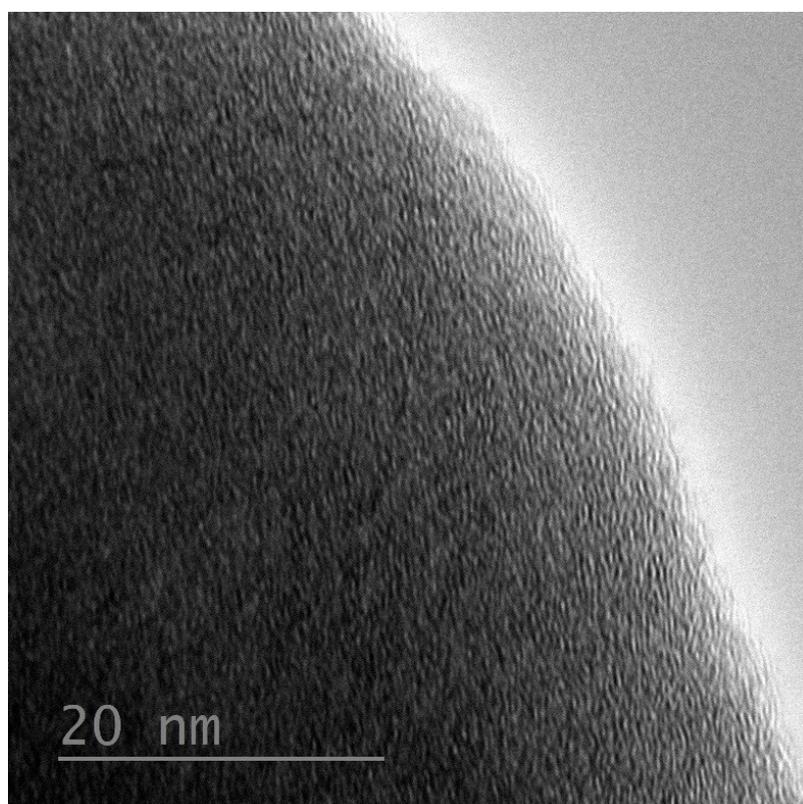


Figure S64 Multi-wall character of **2-500a**.

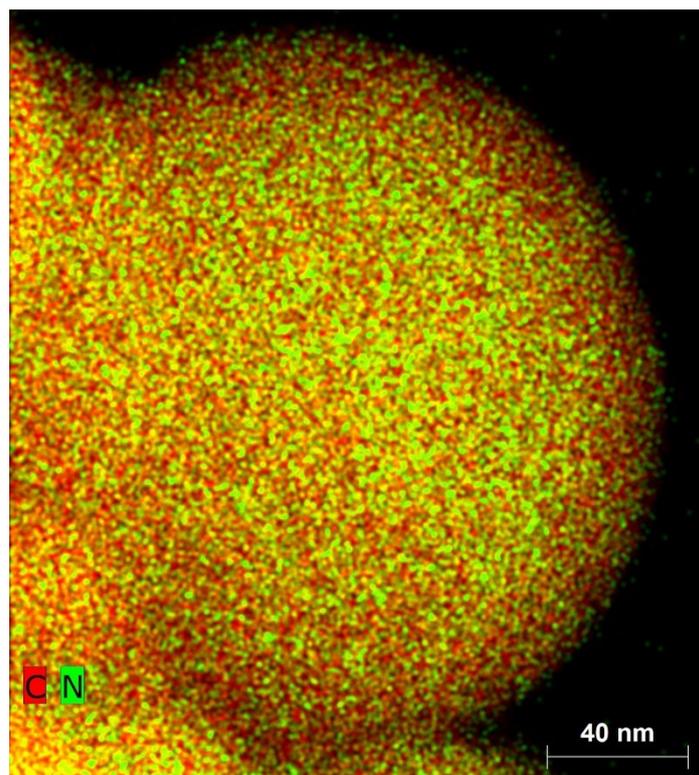


Figure S65 C/N EDS map of 2-500a.

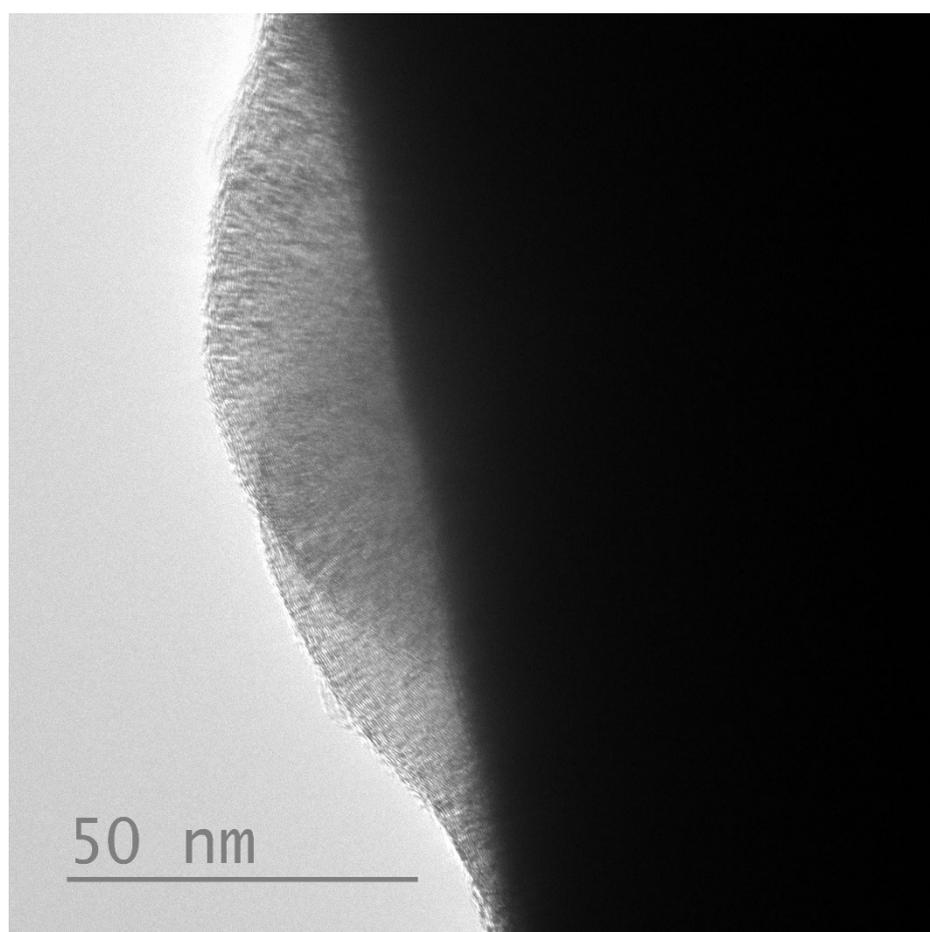


Figure S66 Overlapping formation of spheres in 3-1050a.

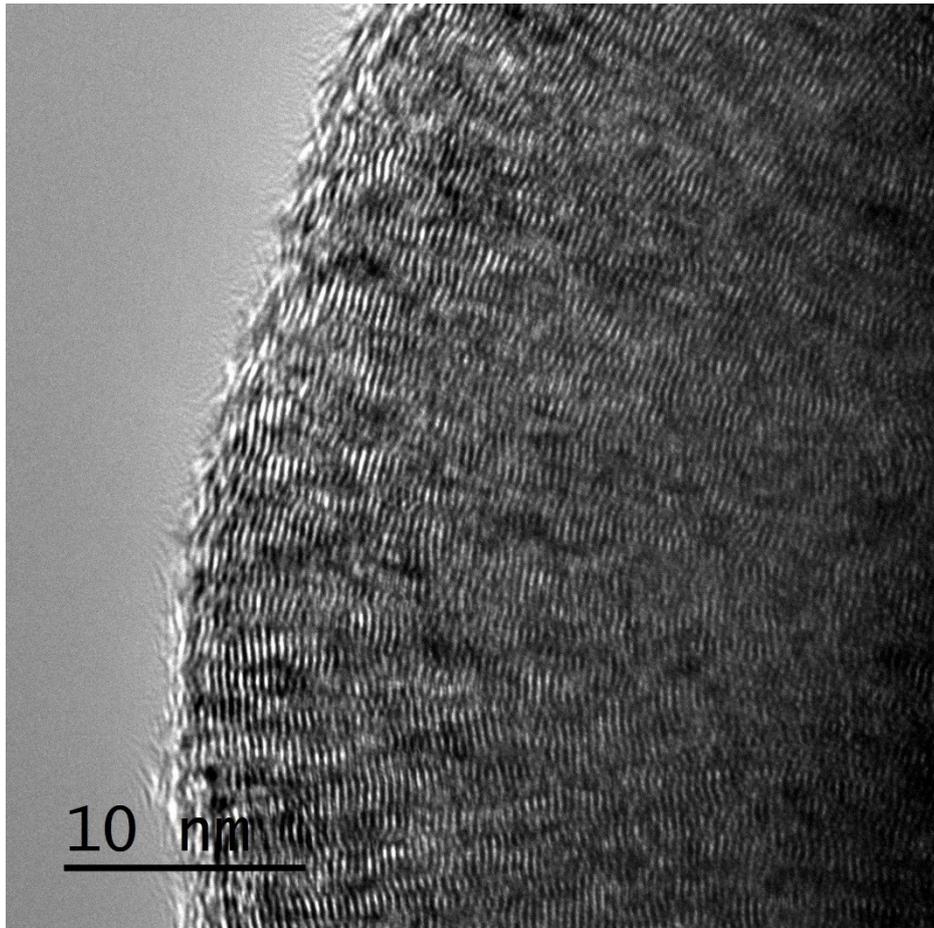


Figure S67 Stacked carbon layers on the surface of **3-1050a**.

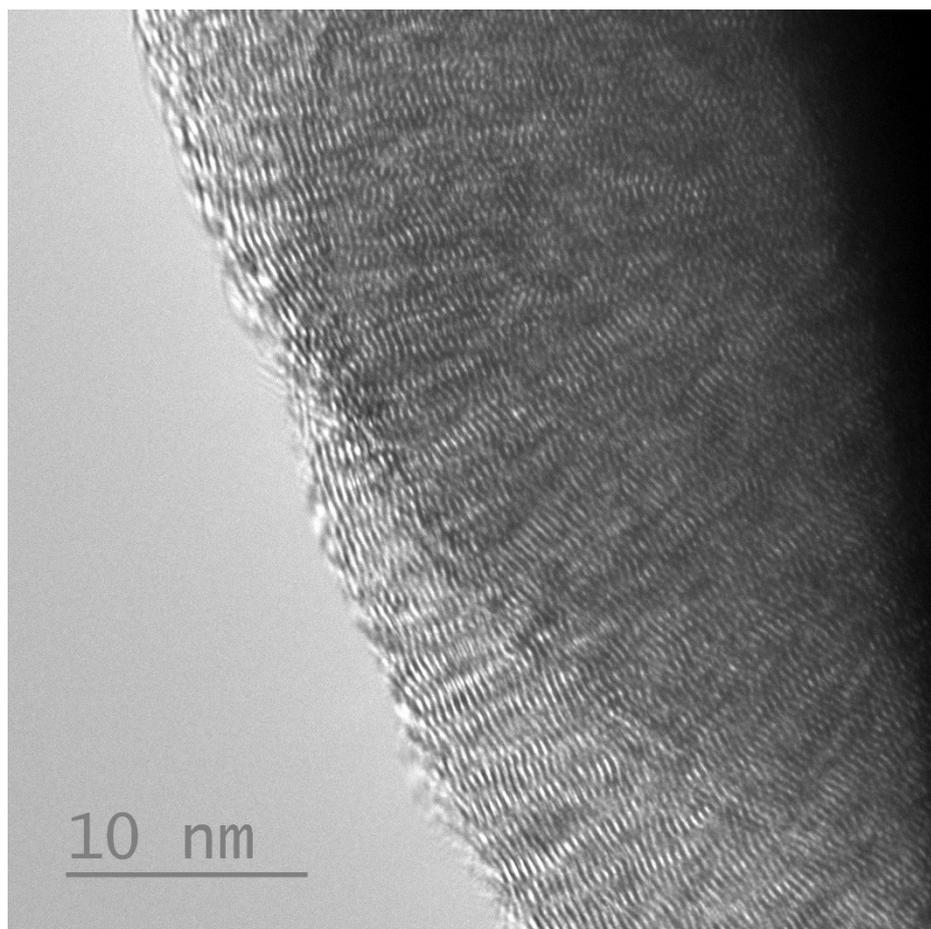


Figure S68 High-resolution detail of connection of two overlapping spheres in **3-1050a**.

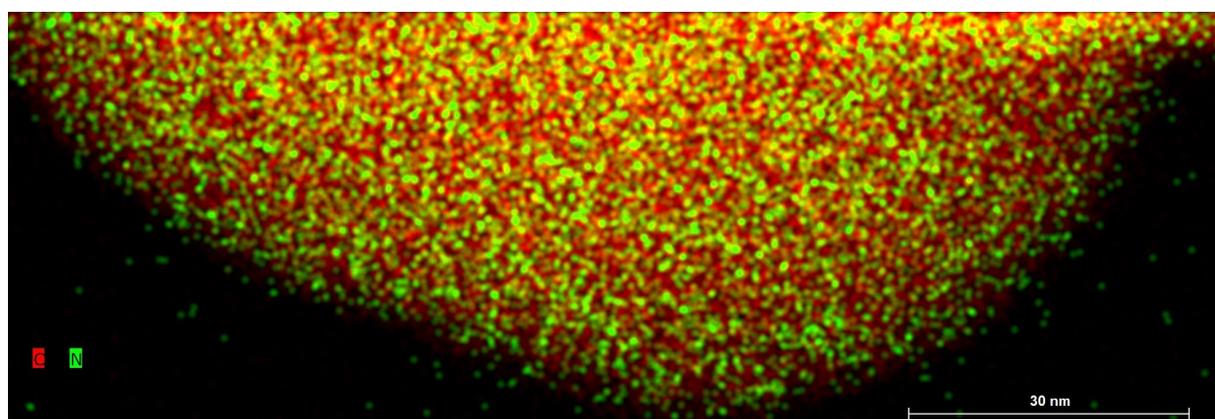


Figure S69 C/N EDS map of spherical formations in **3-1050a**.