

Figure : a) the original and subtracted EEL spectrum corresponding to location #14 in Fig. AAA, together with the model prediction for the zero-loss peak. The inset displays the result of the fit using Eq. (BBB) to the onset region of the subtracted spectrum. b) the ratio of the EELS intensity derivative for sp14 over the corresponding average of the vacuum spectra.

The magnitude and type of the bandgap for these WS2 nanoflowers can be investigated by removing the zero-loss peak (ZLP) contribution to the low-loss region of EEL spectra. Here we use a recently developed model-independent method based on machine learning techniques described in REF. In Fig. 1a we display the original and subtracted EEL spectrum corresponding to the representative location #14 in Fig. AAA, together with the calculated ZLP. The uncertainty bands define the 68% CL intervals of the ZLP prediction and the subtracted spectra. A functional form of the type

is then fitted to the subtracted spectra, keeping track of all relevant sources of uncertainty, and the results are shown in the inset of Fig. 1a. Fig. 1b displays the ratio of the EELS intensity derivative, between sp14 and the corresponding vacuum average, highlighting how around energy losses of 1.8 eV the two curves start to differ, indicating the onset of the inelastic contributions to the spectra. The best-fit values are *EBG=*1.65-0.10+0.22 eV and *b=*1.3-0.30+0.10. The values for the exponent *b* favor an indirect bandgap (for which *b=1.5* is expected) but cannot exclude a direct bandgap (where *b=0.5* instead). The found value of the bandgap is consistent with other determinations in the literature, albeit in the upper end. Consistent results are found for other locations of Fig. AAA. To the best of our knowledge, these results represent the first EELS bandgap analysis of WS2 nanostructures based on mixed 2H/3R polytypes.