Raw Data Description

(1) Files "Fig_1(b-d).dump", "Fig_2(a-c).dump", "Fig_3(a-d).dump" – as recorded by Neaspec s-SNOM software (Linux version). Processing guidelines:

- Data were processed by "Gwyddion" software.

- [x,y] dimensions were divided by a factor of 1.03 to take into account s-SNOM scanner calibration.

- Topography data were plane-corrected. The minimum data value was shifted to zero.

- Phase data "Fig_1(d)" were plane corrected to compensate phase drift in the direction of slow scanning (vertical), keeping the phase within [–pi, +pi] range; a constant value was added to phase data to obtain visually best phase colour representation.

- A constant value was added to phase data "Fig_2(c)" to obtain visually best phase colour representation.

(2) Files "Fig_2(d-f).txt" – as exported from "COMSOL" software. Processing guidelines:

- Few "NaN" data points were replaced with zeros; files headings were deleted, than files were opened with "Gwyddion" software.

- The [x,y] dimensions of Fig_2[d] in *nm* are [600nm X 400nm]. A conversion factor of ~1200 should be used for the raw data. The image in the manuscript was cropped in vertical direction to obtain the final article-version figure.

- The [x,y] dimensions of Fig_2[e,f] in *nm* are [1600nm X 600nm]. A conversion factor of ~3420 should be used for the raw data.

- The raw data for the phase of Fig_2(f) were plane corrected in the direction of incidence of the beam (long axis of the flake) to match experimental conditions (scanning-with-sample mode of the experiment). Then numerical line-artefacts, appearing at the positions of phase flipping from –pi to +pi, were partly filtered with "Popcorn" tool in "WSxM" software.

(3) Processed data were exported in a form of image files which were assembled to the final article-version figures using "Inkscape" software.

(4) Raw data for Figure 4 can be found in the raw data set of the article *Ou, et al., Nat. Commun. 5, 5139 (2014).*