

## Metallicity-sorted single-walled carbon nanotubes for water treatment

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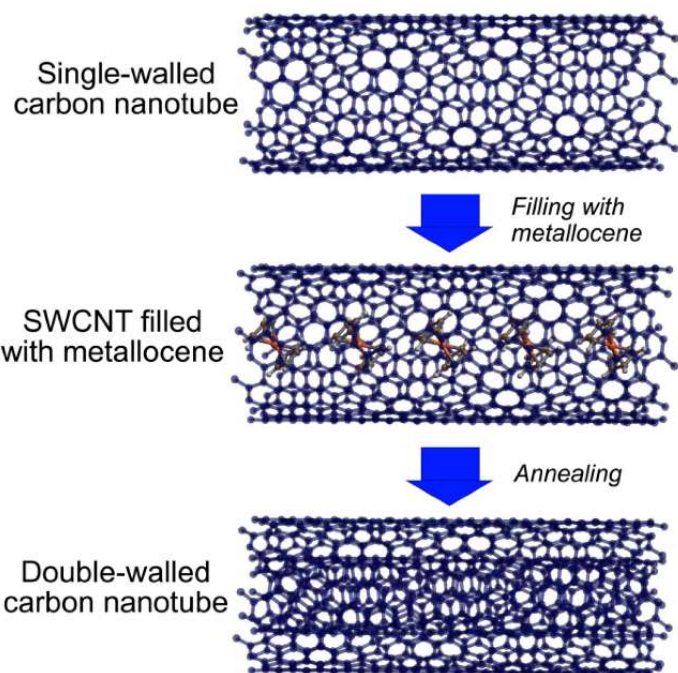
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### INTRODUCTION & AIM

Single-walled carbon nanotubes (SWCNTs) include metallic and semiconducting conductivity types, which depends on their chirality [1, 2]. Metallicity-sorted SWCNTs are promising for water treatment. The aim of this work was the preparation of nickelocene-filled metallicity-sorted SWCNTs and the investigation of their electronic properties. We analyzed the sorted samples by optical absorption spectroscopy, Raman spectroscopy, and X-ray photoelectron spectroscopy (XPS), and we revealed that the sorted fractions of the metallic and semiconducting SWCNTs had high purity.

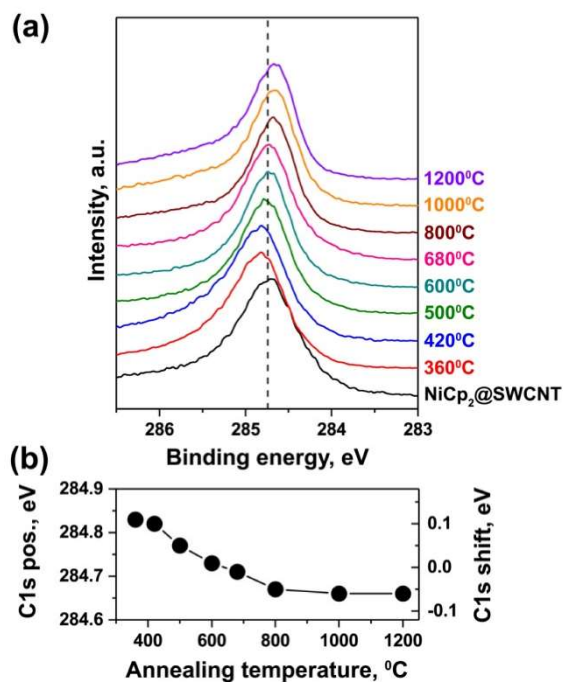
### METHOD

The preparation procedure of the metallicity-sorted SWCNTs included density gradient ultracentrifugation of the arc-discharge SWCNTs, with a diameter of 1.4 nm.



The schematics of filling process of SWCNTs with nickelocene [3]. Copyright 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license.

### RESULTS & DISCUSSION



The C 1s XPS spectra of the nickelocene-filled metallic SWCNTs, and annealed samples [4]. Copyright 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license.

### CONCLUSION

The obtained data on the electronic properties of the metallicity-sorted SWCNTs are required for the water treatment applications.

### REFERENCES

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4. M. V. Kharlamova. *Nanomaterials*, 2021, 11(10), article number 2500.