

## **Formation and optical properties of one-dimensional $sp^2$ and $sp$ carbon nanomaterials: single-wall carbon nanotubes and linear carbon chains.**

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Carbon is a unique element of periodic table with unbeatably rich diversity of allotropic forms. Various low-dimensional carbon structures, as graphene, nanotubes, nanoribbons, fullerenes, carbyne, demonstrate exceptional electronic and optical properties, attractive for different applications.

The first part of this presentation is focused on the alignment of single-wall carbon nanotubes by polymer stretch and self-assembly in liquid media. The optical properties of such structures are strongly anisotropic both on micro- and macroscale. The second part of the talk deals with synthesis of  $sp$  polyynic carbon chains and with the peculiarities of optical absorption and Raman scattering in true one-dimensional linear carbon chains.

Acknowledgements. The work was supported by project RFBR 15-02-08199.