TECHNOLOGY FOR THE SYNTHESIS OF A HIGHLY HOMOGENEOUS AND ORDERED MIXTURE OF CELLULOSE AND 2D LAYERED MATERIALS

The new innovative technology provides an efficient and ecological semi-liquid phase methodology for the exfoliation of 2D layered materials in an aqueous medium and simultaneously creates a mixture of cellulose/2D layered nanomaterials, possibly also with a hierarchically ordered structure. The water-based peeling medium avoids the inconvenience of using liquid phase organic solvents for 2DML exfoliation, which are usually expensive and toxic, while providing high exfoliation yield with high quality exfoliated products.

AREA OF APPLICATION

Technology can be used in the field of nanotechnology, production of nanomaterials and nanocomposites. For example synthesis of mono- or few layer-graphene or boron nitride nanosheets, or polymer-based nanocomposites for electronic sensors, biosensor and biopolymers.

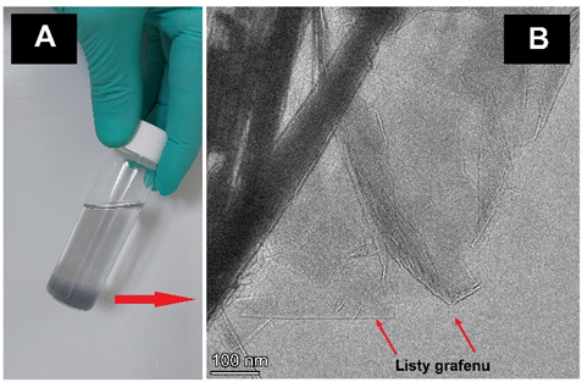
STAGE OF DEVELOPMENT AND PROTECTION

- **international patent application**

COMPETITIVE ADVANTAGE

- the possibility to exfoliate several types of 2DLM one after the other or even simultaneously with the given medium (including hydrophobic ones)
- cost-effective and environmentally friendly (avoids the use of toxic and expensive solvents)
- the exfoliation process can be realized up to single-layer and multi-layer nanosheets in a very short period of time without the use of expensive machines
- the 2DML exfoliation process is performed in a low shear - rate mode (replaces speeds in terms of energy consumption and product quality)

Diluted suspension (A) and TEM image of exfoliated graphene (B)



WE ARE LOOKING FOR AN INDUSTRIAL PARTNER FOR LICENSING/SELLING THE TECHNOLOGY

CEMEA

IPM

For more information please contact:
Ing. Anton Bittner, PhD., MBA
+421 0903 203 930
bittner@up.upsav.sk

Technology Transfer Office
Slovak Academy of Sciences