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New aluminium based materials – nano alumina fibers: Perspectives, properties and potential areas of application

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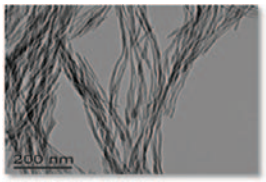
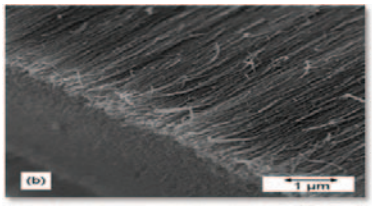
Membranes for ultrafiltrationNAFEN, unique high quality nanomaterial based on industrial production scale is now on the market. Technology and equipment for the production of Alumina Nano Fibers (Nafen) by controlled liquid phase oxidation of Aluminium have been designed and developed, and already introduced to pilot production setup in Tallinn, Estonia.

With the information available on Nafen's properties, we can speak with confidence about the following unmatched properties: Nafen is nanofibers of Al_2O_3 crystals in Gamma (γ), Chi (χ), and Alpha (α) phases; Controllable diameters: 7–40 nm monodispersed, length over 15 cm, synthesized as a regular structure of co-aligned fibers.

At present, the following spheres of application has been discovered:



- Structural and multifunctional composites – the so-called metal matrix composites, possessing high mechanical and thermo stability and ceramic matrix composites – allow combination of high working temperatures, stability, flexibility, low temperature conductivity and chemical persistence.
- Catalytic chemistry - development of compact high effective catalysts, new type of catalysts, and consequently – new chemical processes
- High temperature thermo insulation materials
- Nano powders with uniform composition for diverse applications
- Nano filters – for filtration and separation of gases and liquids
- Electronics
- Energetics
- Medicine and biology
- Agriculture



Nafen offers tremendous opportunities for materials based on Aluminium as a metal and increases the volume and expanding the sphere of consumption of Aluminium.

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