

Appendix

Photos of scanning electron microscope of the surface of CANA-AN™

- Photo1: CNT coated multi-filaments CANA-AN™
- Photo2: CNT network on the surface of each filament

Product Specification

- Fiber: Polyester multi-filaments
- Conductivity: 10^2 to 10^{10} /cm

About Prof. Fugetsu

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Acknowledgement

Kuraray and Mitsui are pleased to work with:

- CNT aqueous solution manufacturing: Parker Corporation Co. Ltd.
- Coated yarn manufacturing: Chakyu Dyeing Co., Ltd
- MWCNT manufacturing: Nano Carbon Technologies Co., Ltd. (NCT)

About Antistatic Fiber

In order to avoid static electricity of a fabric, electro-conductive fiber is generally incorporated into the fabric. This fiber performs antistatic efficacy by dispersion of locally caused static or neutralization by corona discharge. The conductivity of the fiber has a suitable range. In the case of too high, effective dispersion or corona discharge does not proceed well. In the case of too low, the amount of accumulated static energy is too big so as to cause undesired damage in discharge. Suitable range is 10^5 to 10^{10} /cm, and the optimal value is 10^5 /cm.

About CNT

CNT, representing a new class of engineered nanomaterials, are being proposed for multiple uses in the production of new and improved products that will greatly impact the fields of electronics, transportation and medicine, among others. To date, the biological activity of various forms of CNT has not been completely investigated, and a systematic evaluation of the relationship between physicochemical properties of the many types of CNT and toxicological potential has not been conducted.

About CNT safety

The MWCNT used for those applications have been evaluated its biological performance at National Institute for Occupational Safety and Health in US (NIOSH): Its code name is Mitsui MWNT-7 among institutes. The Evaluation results have been disclosed in a workshop entitled "Health Risks of Carbon Nanotubes: What Can We Learn From Mineral Fibers or Ultra-fine Particulates?" held on March 26, 2007 at the Society of Toxicology (SOT) annual meeting. It brought together experts from industry, academia, and governmental institutions to present the status of current toxicological and exposure data on CNT, identify knowledge gaps, and outline future directions. Current information concerning the biological activity of single-walled CNT was presented and compared with preliminary findings (intensive qualitative results) on multi-walled CNT. NIOSH investigators are conducting studies of in vivo (animal) responses, while the EPA is investigating biological activity using in vitro (test tube) models. At the SOT Workshop, NIOSH presented its preliminary results for multi-walled CNT, which showed that CNT does not behave like known mineral fibers. The workshop participants agreed that the biological evaluation must be conducted using well-characterized CNT such as Mitsui MWNT-7 as mentioned by NIOSH and others. The outline can be found elsewhere (NIOSH results by poster: Sriram, K., et al, Workshop outline: NanoMaterials News, 3 April 2007, and Thomson Health & amp, Medicine Week 4/5/2007).

In addition, Mitsui is collaborating with scientists at Shinshu University in Japan to evaluate sensitivity to skin with those products and it was presented that they did not show particular results concerned.

Photo1: CNT coated multi-filaments CANA-AN™

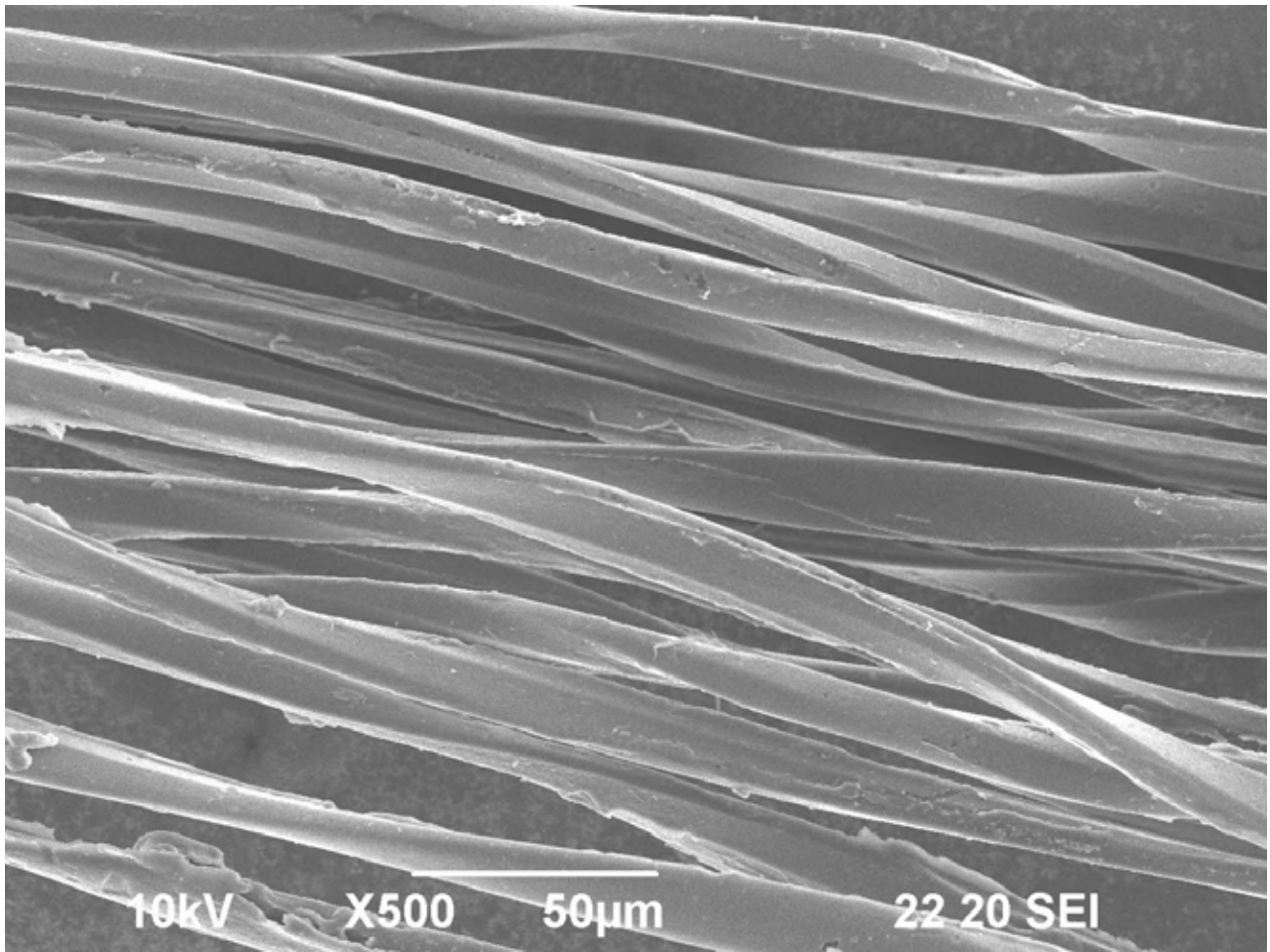


Photo2: CNT network on the surface of each filament

