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## Announcement Regarding the First Product Adoption of Cellulose Nano-Fiber Sheet

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Oji Holdings Corporation (President: Masatoshi Kaku, Head Office: Chuo-ku, Tokyo) announces the first practical realization of Cellulose Nano-Fiber sheet (hereinafter CNF sheet) for materials used in table tennis rackets of Darker Co. Ltd. (President: Kazuhiko Okada, Head Office: Shinjuku-ku, Tokyo) for general consumers.

CNF is a wood-derived bio-based material, which is expected to be used in various applications utilizing its features of high strength and high transparency. We have promoted the development of CNF based on the core technology of paper industry, and succeeded in producing continuous transparent CNF sheets for the first time in the world. Since the CNF sheet has both thermal dimensional stability and flexibility, it is expected to be a great substitute for glass and plastic films. In response to the growing domestic and overseas demand for CNF sheet samples, CNF sheet demonstration facility was introduced in the latter half of 2017.

While distributing samples in a wide range of fields, we have further refined our manufacturing technology and established mass production technology through continuous production.

Our CNF sheet is customizable in terms of mechanical properties and surface properties, so we are currently developing products that meet our individual customers' needs, such as sheets that meet the needs of each application and sheets that can be combined with different materials.

Sensory evaluation of the feeling of hitting a ball "hit feeling," which is difficult to quantify, is important for evaluating a table tennis racket. "Hit feeling" depends on the repulsion and elasticity of raw material used in the racket. For example, when you try to increase repulsion, elasticity will decrease conversely, resulting in poor "hit feeling". By repeatedly testing prototypes aiming to obtain new "hit feeling" by combining the CNF sheet and the base material wood, we have succeeded in optimizing the CNF sheet specification possessing moderate balance of repulsion and elasticity. As a result, a table tennis racket with a new "hit feeling" has been realized, while maximizing potential of CNF.

This table tennis racket is scheduled on sale as of April 2020 as a new lineup of Darker Co. Ltd.

We will continue to promote the practical application and market penetration of CNF in a variety of fields by utilizing and advancing these CNF manufacturing technologies.

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