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## ZEON Corporation Develops a New Generation ZEONOR Film<sup>®</sup> for Large LCD Televisions

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ZEON Corporation (President & CEO: Naozumi Furukawa) has successfully developed new ZEONOR Film<sup>®</sup>, optical material mainly used in large LCD televisions, with the guidance of Professor Tadahiro Ohmi of the New Industry Creation Hatchery Center, Tohoku University, and supported by a grant from NEDO (New Energy and Industrial Technology Development Organization).

The following four film types have now been added to the new ZEONOR Film<sup>®</sup> rolls, which have been widely used for liquid crystal displays in cellular phones and LCD televisions.

- (1) Low double refraction ZEONOR Film<sup>®</sup> roll
- (2) Vertical uniaxial stretched ZEONOR Film®
- (3) Horizontal uniaxial stretched ZEONOR Film®
- (4) Vertical and horizontal biaxial stretched ZEONOR Film®

New ZEONOR Film<sup>®</sup> will be manufactured and marketed by Optes Co., Ltd. (President: Masahiro Yamazaki), a wholly owned subsidiary of ZEON Corporation, with a sales target of over ¥10 billion in fiscal 2005. Features of new ZEONOR Film<sup>®</sup> are: low double refraction, high polarizing performance, which delivers uniform polarization on wide film. This new ZEONOR Film<sup>®</sup> can decrease the number of film layers required in LCDs. In addition, with structural design to fulfill polarization performance as well as to protect the polarizing plates, the number of parts can be reduced and the production process streamlined, leading to cost reductions. Therefore, new ZEONOR Film<sup>®</sup> is expected to promote lower prices of LCD TVs and help spread the popularity. Also, new ZEONOR Film<sup>®</sup> has zero water absorption, improves the durability of the polarizing plates (two polarizing plates are required in LCD TVs), and prevents contrast deterioration caused by glow leaked from the surrounding screen. Therefore, durability and quality are expected to improve.

The basic technologies in manufacturing new ZEONOR Film<sup>®</sup> are extrusion and stretching technologies to produce uniformly wide film. In the past, the production of wide polarizing film capable of continuous roll-to-roll pasting with polarizing plates was impossible. However, ZEON established this new production technique by using stretching equipment developed with an R&D investment subsidized by NEDO, and by a process innovation, in addition to application of our original extrusion film molding technology. Also, since roll-to-roll pasting technology that uses new ZEONOR Film<sup>®</sup> is in the final phase of development, wide polarizing film using new ZEONOR Film<sup>®</sup> is expected to be used in LCD televisions gradually from the end of fiscal 2004.

ZEON was the first in the world to successfully develop ZEONOR Film<sup>®</sup>, a uniform plastic optical film using the melt extrusion process, in October, 2002. ZEON began marketing ZEONOR Film<sup>®</sup> as a polarizing roll film. This product has superior optical properties including high transparency, low double refraction, low dispersion, and low light elasticity. ZEONOR Film<sup>®</sup> also features low moisture permeability and high heat resistance, and it provides excellent durability as optical film for LCDs. Sales have been rapidly increasing.

New ZEONOR Film<sup>®</sup> satisfies performance requirements in the next generation of large LCD flat panel displays, meets the demands of the market, and will take an important role in accelerating the popularization of these futuristic displays.



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