US007766561B1

(12) **United States Patent**
Mahapatra et al.

(10) **Patent No.: US 7,766,561 B1**
(45) **Date of Patent: Aug. 3, 2010**

(54) **ENVIRONMENTALLY ROBUST LIQUID CRYSTAL POLYMER COATED OPTICAL FIBER CABLE AND ITS USE IN HERMETIC PACKAGING**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **12/490,586**

(22) Filed: **Jun. 24, 2009**

Related U.S. Application Data

(62) Division of application No. 11/986,815, filed on Nov. 27, 2007, now Pat. No. 7,570,853.

(51) **Int. Cl.**
G02B 6/36 (2006.01)

(52) **U.S. Cl.** **385/94**; 385/88; 385/92; 385/128

(58) **Field of Classification Search** 385/94, 385/100, 141, 14, 88, 89, 92, 93, 142, 145, 385/128, 11
See application file for complete search history.

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(57) **ABSTRACT**

The invention relates to high-strength, abrasion-resistant optical fiber cable having a supplemental layer consisting essentially of a liquid crystal polymer (LCP) to enhance the cable's tensile strength and hermetically seal it, and an outermost encasing layer to protect the LCP supplemental layer from damage that could otherwise diminish the tensile strength or destroy the moisture barrier properties of the cable gained by adding the supplemental liquid crystal polymer layer. The encasing layer is preferably a thin layer of a smooth, non-crystalline thermoplastic that can be easily removed with chemicals that do not affect the properties of the supplemental layer so that the supplemental layer can be made accessible for promoting the formation of hermetically sealed interfaces between the cable and other structures. Cross-head extrusion methods for coating optical fibers with LCP and encasing layers are described along with laser and ultrasonic bonding techniques for fabricating hermetic packages.

19 Claims, 9 Drawing Sheets