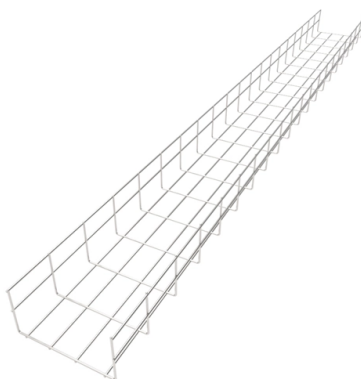


Collider Tail Fiber Processing Technology



Overview

CN107589493B The invention relates to the field of optical cable processing, in particular to a processing technology of prefabricated tail fibers. CN11045.

Key Takeaways

Collider tail fiber processing technology involves precise preparation, ferrule insertion, glue curing, and automated alignment to ensure high-quality prefabricated optical fibers. Overview of the Technology

Collider tail fiber processing focuses on prefabricated optical fibers, often used in high-precision applications such as telecommunications or scientific instrumentation. The technology ensures reliable fiber alignment, secure ferrule attachment, and efficient production.

Key Processing Steps

- **Cable Cutting and Slitting** The butterfly cable is wound on a disc dividing tool and cut to a set length. This ensures uniform fiber segments for subsequent processing .
- **Fiber Stripping** The outer layer of the optical fiber is stripped to expose a bare fiber section, which is necessary for insertion into the ferrule .
- **Ferrule Preparation and Glue Injection** A ceramic ferrule is pre-injected with adhesive. The ferrule is positioned in a lower and upper ferrule seat with tapered holes that guide the bare fiber for automatic alignment . In some systems, multiple inserting cores are aligned on a glue injection plate, and glue is injected simultaneously to improve efficiency .

- **Core Insertion** The bare fiber is inserted into the ceramic ferrule using controlled movement of the lower and upper bases, ensuring precise alignment and secure attachment .
- **Heating and Curing** The ferrule is heated to cure the adhesive, fixing the fiber securely within the ferrule .
- **Connector and Spare Part Installation** Connector components and any additional parts are installed at the fiber end to complete the prefabricated tail fiber assembly .
- **Grinding and Polishing** The ferrule end is ground and polished to ensure smooth fiber surfaces and optimal optical performance .
- **Inspection and Quality Control** The finished fiber is inspected using detection equipment to verify alignment, adhesive curing, and surface quality .

Automation and Efficiency Enhancements

- **Automated Alignment:** Tapered holes in ferrule seats allow fibers to self-align during insertion, reducing manual labor and improving consistency .
- **Simultaneous Glue Injection:** Multiple inserting cores can be glued at once using a movable pressing plate, significantly increasing throughput .
- **Precision Grinding:** Automated grinding devices ensure uniform ferrule end surfaces, critical for optical performance .

Advanced Fiber Materials and Coatings

In addition to mechanical processing, modern fiber technologies may involve ceramic fibers, hybrid polymers, and specialized coatings to enhance durability, temperature stability, and corrosion resistance . Coatings are applied using wet chemical processes and can achieve production speeds up to 1000 m/h, ensuring high-quality fiber surfaces for demanding applications .

Summary

Collider tail fiber processing technology integrates mechanical precision, adhesive curing, automated alignment, and quality inspection to produce high-performance prefabricated optical fibers. Innovations such as simultaneous glue injection, tapered alignment holes, and automated grinding improve efficiency, reliability, and optical performance, making this technology suitable for advanced optical systems and high-throughput manufacturing environments .

Article Content

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The invention relates to the field of optical cable processing, in particular to a processing technology of prefabricated tail fibers.

CN110456458B

The invention relates to the field of optical cables, in particular to a processing technology of prefabricated tail fibers.

Novel cattail fiber composites: converting waste

In the current research, cattail fibers were extracted from plants (18–30% yield) using alkali retting and non

Phage tail fibre assembly proteins employ a modular structure to drive ...

Despite the wide occurrence of Tfa proteins, their functional mechanism has not been elucidated. Here, we investigate

RBPseg: Toward a complete phage tail fiber structure atlas

Here, we introduce RBPseg, a method that combines monomeric ESMFold predictions with a structural- based domain

Automated fiber placement: A review of history, current technologies ...

The AFP process consists of a gantry/robotic system with an attached fiber placement head. The AFP head enables

Effect of fiber surface treatment on mechanical, interfacial, and ...

Surface treatment of cattail, a lignocellulosic renewable fiber, was investigated to determine the conditions that would reduce

A Tail Fiber Engineering Platform for Improved Bacterial Transduction ...

The results revealed that Mu phage employs different structural motifs for two individual tail fibers for recognizing different hosts, and

Tail Fiber: Types, Functions, and Common Interfaces

A tail fiber, also known as a fiber optic patch cord, consists of a connector on one end and a cut end of the fiber optic

Investigation of the Tail Fibres and Tail Fibre Assembly Proteins

The tail fibres of phage T4 have long served as the paradigm for understanding tail fibre systems despite their greater complexity

Carbon Fiber Technology Facility

Relevance: The Carbon Fiber Technology Facility is relevant in proving the scale-up of low-cost advanced fiber precursor materials

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The application discloses processing technology of prefabricated tail fiber, including the lock pin process, the lock pin process

Highly efficient tail screen for minimum fiber loss

CombiSorter is a continuously operated, highly efficient tail screen for separating plastics and light rejects. With very high

Phage tail fibre assembly proteins employ a modular structure to drive ...

The crystal structure of a complex between the tail fibre and tail fibre assembly (Tfa) protein of Escherichia coli phage

Understanding Bacteriophage Tail Fiber

The exact mechanisms of how the tail fiber interacts with the receptor at the molecular/atomic level are critical for engineering

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The invention relates to the technical field of optical fiber processing, in particular to a tail fiber processing device and a tail fiber

Amino acid residues in the tail fiber differentiate the host ...

These findings provide insights into how the mutations in the tail fiber gene contribute to the fitness of phages within

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The invention discloses a processing technology of prefabricated tail fibers, which comprises the following steps: 1) stripping the fiber

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