

TECH SCAN

TEXTILE COLOR TECHNOLOGY



WHERE MIND MEETS MARKET

The textile industry has seen a noticeable shift in recent years toward novel approaches, especially in the discipline of textile color technology. As the industry strives to adapt to changing environmental standards and consumer preferences, the development of advanced color technologies has become a key focus. This paradigm shift is driven by the industry's dedication to sustainable practices and meeting the demands of a changing market.

In an effort to protect the intellectual property rights associated with these innovations, the textile industry is actively involved in patent filings. Businesses, academic institutions, and individuals operating in the Indian textile sector understand the strategic significance of obtaining patents

in this rapidly evolving field. These patent applications encompass a wide range of aspects surrounding textile color technology, such as sustainable dye sources, dyeing techniques, integration with smart textiles, and general improvements in textile coloring procedures.

As with any advanced technological domain, patents in textile color technology serve as crucial legal instruments, safeguarding innovative concepts and promoting a relentless pursuit of research and development. A deeper exploration into this field reveals its significance extends far beyond the mere application of color. It stands as a key factor, propelling the textile sector toward a future characterized by sustainability, groundbreaking innovation, and unparalleled inventiveness.



INNOVATION TIMELINE



PATENTABLE COMPONENTS

TEXTILE COLOR STRIPPING

- Low-temperature Plasma Technology

NOVEL DYES AND COLORANTS

- Bio-based Colorants
- Photochromic Dyes
- Thermochromic Dyes
- Fluorescent Dyes
- Color-shifting Dyes

DYEING METHOD

- Ultrasonic Dyeing
- Digital Inkjet Printing
- Nanoparticle-based Method

DYEING APPARATUS

- Automated Color Control and Monitoring Systems
- Robotic Handling and Manipulation
- Bio-based Filtration Technologies
- Big Data Analytics and Machine Learning

ENVIRONMENT FRIENDLY DYEING

- Photo-induced Solution Copolymerization
- Photo-crosslinking of Dye

DETECTION SYSTEM

- Textile Color Detection System
- Color Detection Method
- Material Detection Method

ENERGY EFFICIENT DYEING PROCESSES

- Bio-based Polyurethane Dispersion
- Low-temperature Processes
- Reduced Water Consumption

COLOR DESIGN AND MANAGEMENT SYSTEMS

- AI-powered Color Prediction Tools
- Virtual Color Simulation Platforms
- Blockchain-based Color Traceability

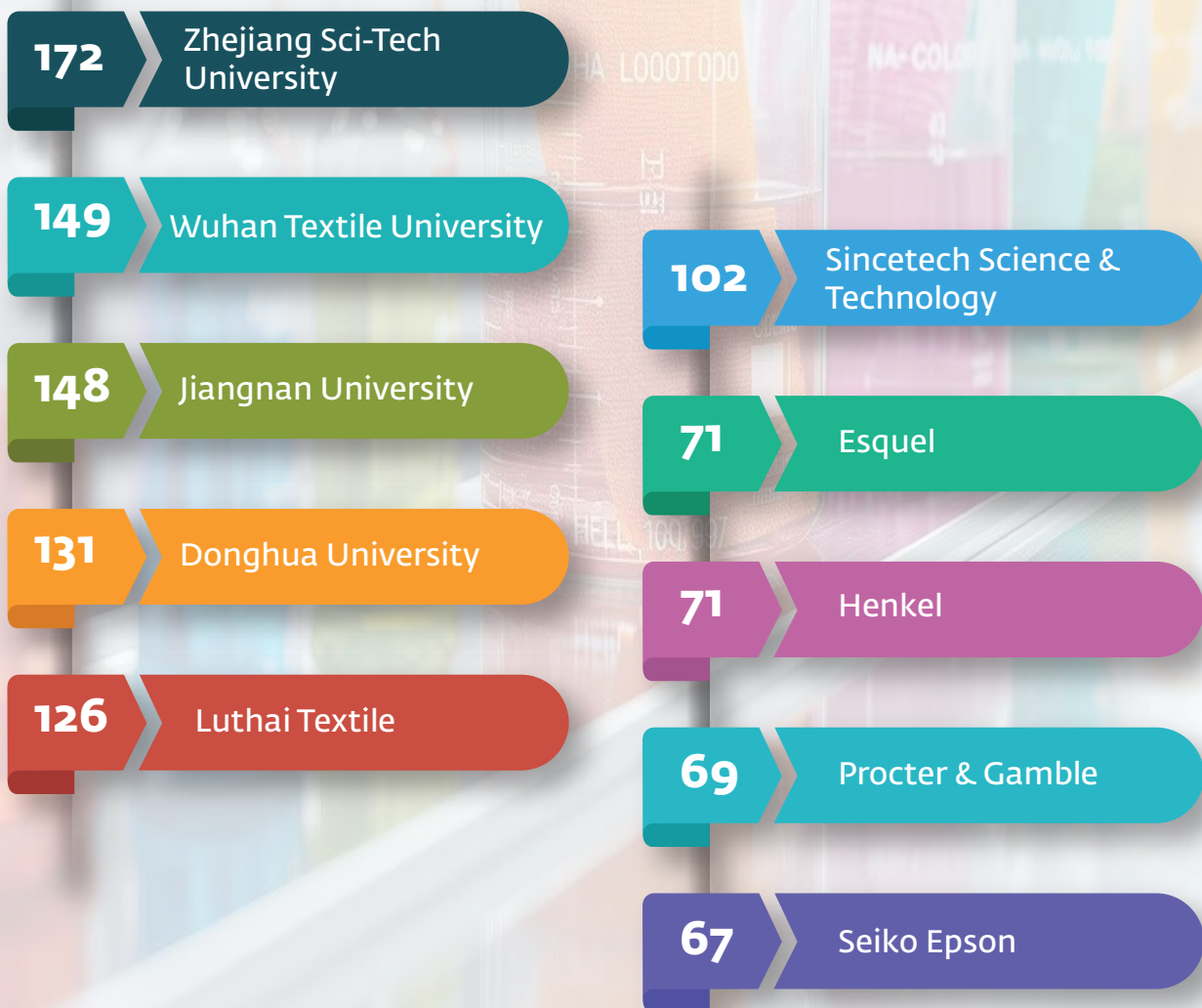
SMART TEXTILE COLOR-CHANGING MECHANISMS

- **Stretchable Chromatic Sensors:** Respond to Strain or Pressure
- **Bioresponsive Dyes:** Biomarkers
- **Thermochromic Yarns:** Change Color with Temperature
- **Light-emitting Textiles:** Incorporation of Electroluminescent or Bioluminescent Materials
- **Self-healing Color Pigments:** Dyes that Repair Scratches

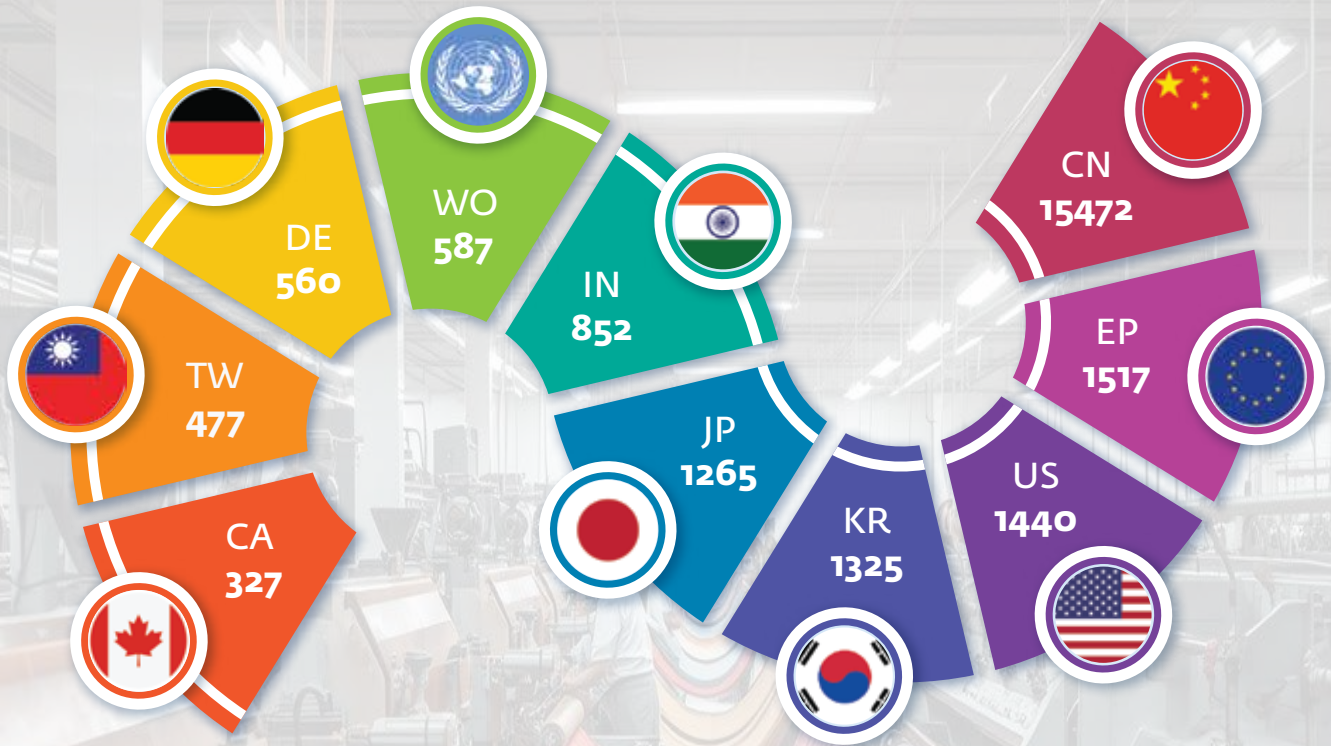
PATENT STATISTICS



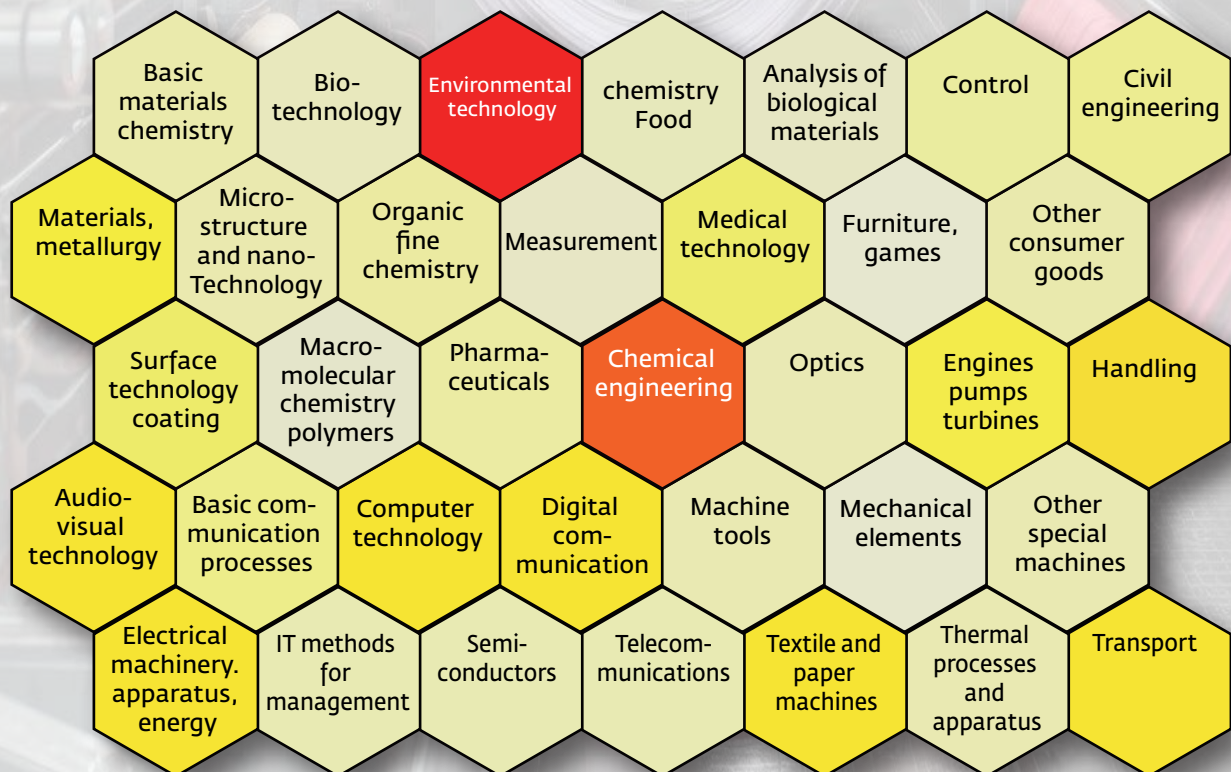
TOP APPLICANTS



PATENT LANDSCAPE



TECH DOMAIN



Database: Questel Orbit

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NOTABLE INNOVATIONS

Patent Application	Priority date	Title	Assignee
CN119615648	Feb 12, 2025	Denim With Ozone Fastness Resistance and Preparation Method thereof	Jiangsu Deliheng Cotton Ind Co Ltd
CN119610920	Jan 8, 2025	Film Transfer Printing Method for Digital Color Hot Stamping and Gold Stamping of Textiles	Taotech Digital Tech Co Ltd
CN116575158	Jul 13, 2023	Production Method of Mildew-Proof Polyester-cotton Blended Singly Dyed Yarn	Jiangsu Zhenlu Textile Co. Ltd.
CN116516672	Apr 18, 2023	Sun-Proof Thermochromic Microcapsule and Preparation Method Thereof	Univ Jiangnan
WO2023225395	May 20, 2022	Odor Control Polymer Coatings on Textiles	Microban Products Company
WO2023161711	Feb 24, 2022	Color Change Material for Monitoring the Wear of a Textile-based Material	Aquis Eu Unipessoal Lda Cavaco Paulo Artur Manuel Pereira Marinho Da Silva Carla Manuela
CN113308894	Jun 7, 2021	Acidochromic Intelligent Textile and Preparation Method Thereof	Wuhan Textile University
CN112832038	Dec 29, 2020	Preparation Method of Textile Color Card for Ultraviolet Intensity Detection	Jiangnan University
US20230257935	Jul 1, 2020	System and Methods for Live Area Printing for Dark Colored Textiles Having Novel Color-matching Characteristics	Greene Daniel
WO2023244593	Jan 30, 2020	Molecular Ink and Method for Printing Resistive Film Coatings	Liquid X Printed Metals Inc.

Ozone Nozzle
Printing System

Closed-loop
Dyeing
Systems

Engineering
Plants
to produce
Specific
Pigments

Dope dyeing
reduces water
and chemical
usage

Blockchain
Tracking Dye
and Textile
Carbon
Footprint

AI-powered
VR/AR enables
3D Model
Garment Trials

3D Thermo-
sensitive
Color-developing
Knitted Fabric

Electrochromic
fabrics change
color with
emotions

Smart Dyes
indicate
Sweat, pH, or
Bacterial
Growth

Nanoparticles
with Unique
Optical
Properties

Textile with
Dynamic Color
Adaptation and
Antibacterial
Properties

Cloud-based color
management
improves global
collaboration

AI predicts
Colorfastness
and Durability
by Dye Analysis

Lab-grown
textiles support
sustainable,
customizable
coloring

If you would like to learn more about any of these areas or have specific questions, we're here to provide further information and insights. Our team is dedicated to driving progress and staying at the forefront of Textile Color Technology.

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