

Textile Pressure Sensors: Innovations and IP Landscape

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INTRODUCTION & AIM

Textile pressure sensors represent a recent field area of development within the field of wearable technology and smart textiles.

The potential applications of these sensors are diverse, spanning healthcare, sports, and other domains.

The objective of this paper is to provide a comprehensive analysis and benchmarking of the intellectual property rights (IPR) scenario for textile pressure sensors.

Indeed, as the field progresses, it will be necessary to implement ongoing adaptations to IP strategies and legal frameworks to effectively address the emerging challenges and opportunities.

METHOD

The patent data were sourced from some well-known databases, including **Patentscope**, **Google Patents**, **Espacenet** and **Orbit Intelligence**.

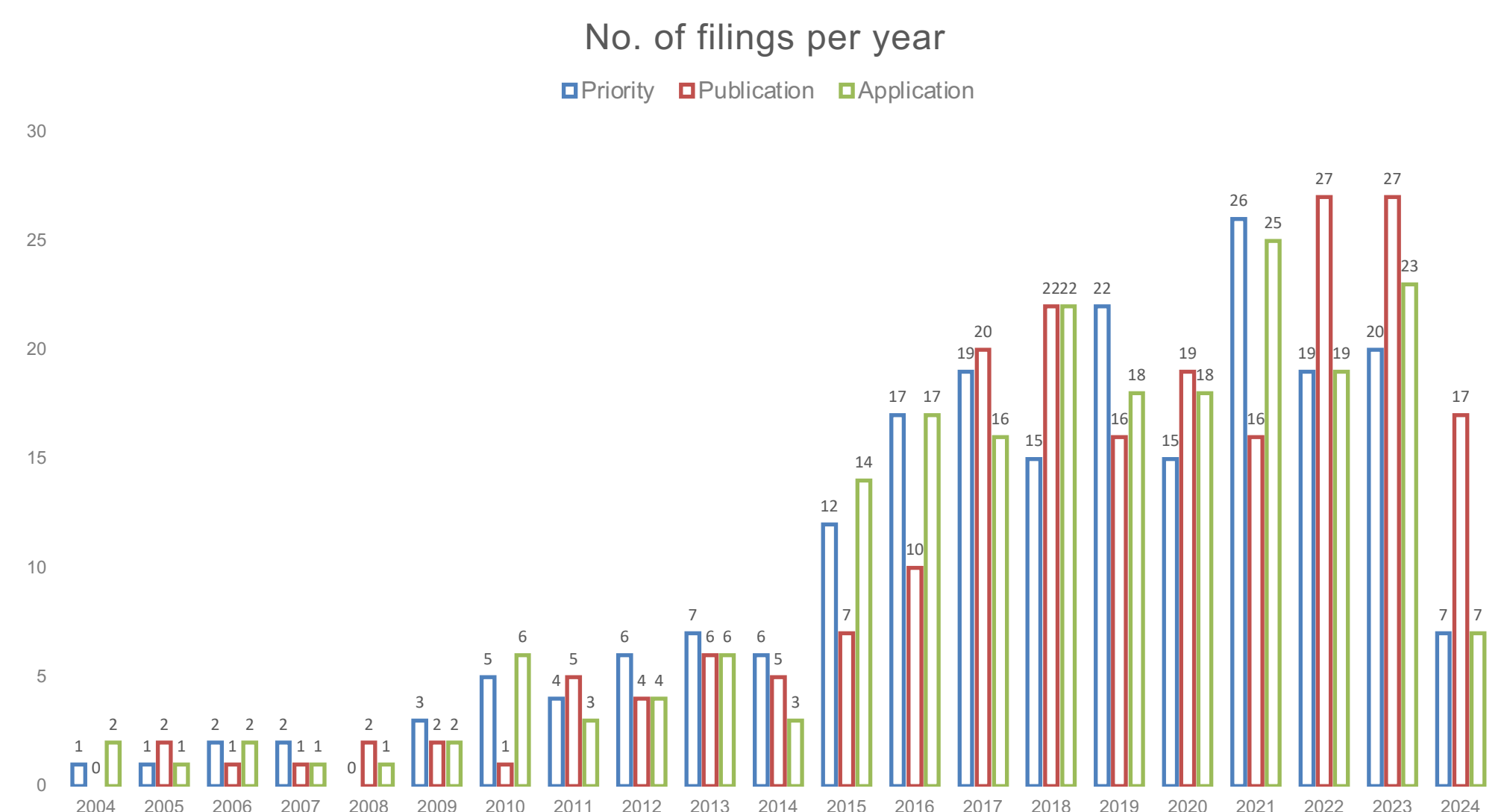
The searches were conducted using keywords exclusively, across the Title, Abstract, Claims and Description search fields. Boolean and proximity operators were employed.

Below is reported the search strategy used in Orbit database.

Search step	Results	Query
1	21	(TEXTILE PRESSURE SENSOR)/TI/AB/CLMS/ICLM
2	52	(FABRIC PRESSURE SENSOR)/TI/AB/CLMS/ICLM
3	0	(KNITTED PRESSURE SENSOR)/TI/AB/CLMS/ICLM
4	87	(TEXTILE PRESSURE SENSOR)/TI/AB/CLMS/DESC/ODES/ICLM
5	130	(FABRIC PRESSURE SENSOR)/TI/AB/CLMS/DESC/ODES/ICLM
6	206	1 OR 2 OR 4 OR 5
7	59	(TEXTILE PRESSURE SENSOR)/KEYW/TI/AB
8	134	(FABRIC PRESSURE SENSOR)/KEYW/TI/AB
9	1	(KNITTED PRESSURE SENSOR)/KEYW/TI/AB
10	288	6 OR 7 OR 8 OR 9

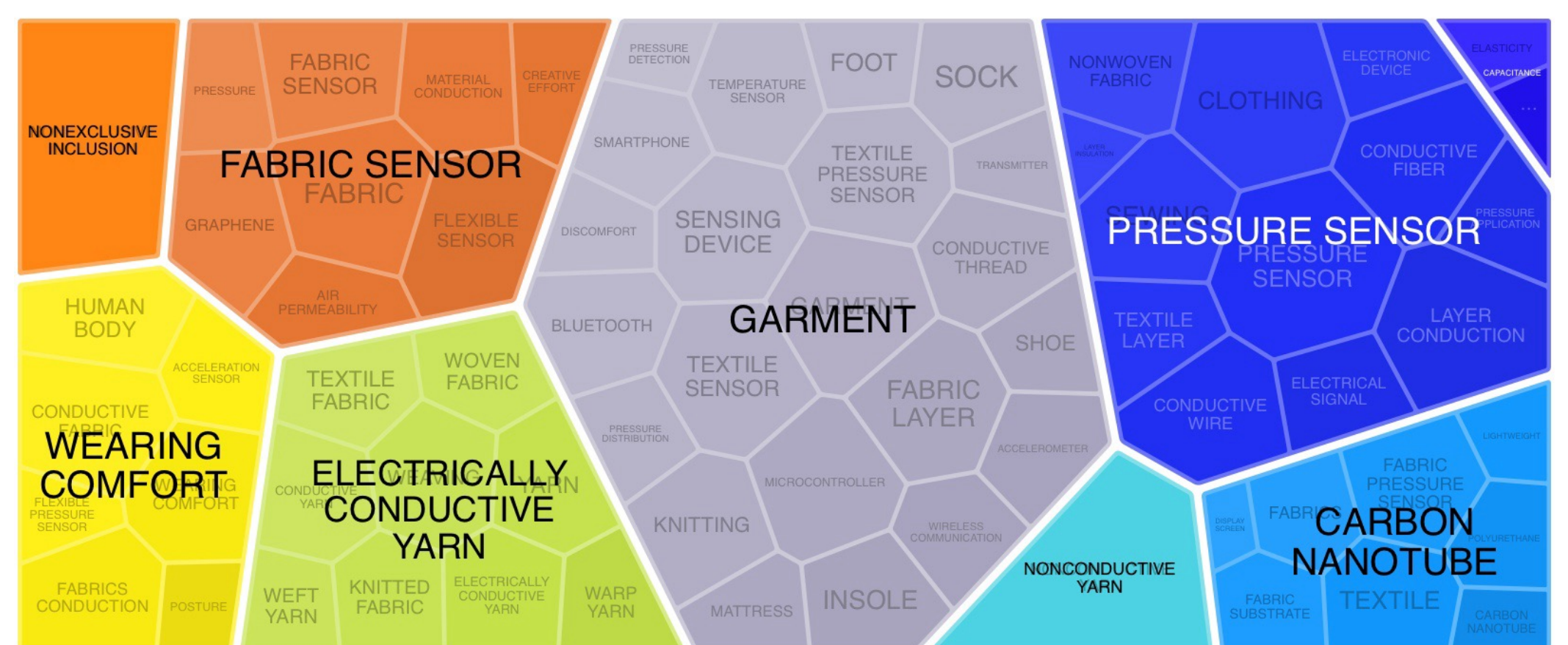
RESULTS & DISCUSSION

The number of patent filings has been on the rise from 2014 until 2021.



The documents retrieved by the search are categorized in the following top three subclasses **G01L** (Measuring force, stress, torque, work, mechanical power and efficiency, or fluid pressure) **A61B** (Diagnosis) and **D10B** (indexing scheme associated with the subclasses of Section D relating to textiles and the chemical composition of fibrous materials).

The Figure below allows for the rapid identification of the most frequently occurring concepts. This can serve as a source of inspiration for new developments.



CONCLUSION

A patent landscape is a specific type of patent search conducted to identify the most recent inventions or to study the evolution of a particular technology and provides an overview of patent activity.

A patent landscape analysis (PLA) was carried out on textile pressure sensors, which used in a variety of applications, including wearable electronics, healthcare monitoring, and smart textiles.

The data analysis confirmed a positive trend in the number of patent applications until 2021.

Most of the priority patent applications (and utility models) were filed in China.

In addition, PLA has showed an increase in the use of **piezoresistive materials**.

In terms of materials used in force sensors, carbon allotropes are in first place: **graphene** (32 results), **carbon black** (26) and **carbon nanotubes** (14).

Other materials mentioned are: PEDOT (17), polyaniline (12), MXenes (7) and $Ti_3C_2T_x$ (2).