GENERAL ASPECTS CONCERNING MULTIFUNCTIONAL FIBER TEXTILES

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Abstract: *This paperwork analyses the synthesis of literature regarding functional textiles. The actuality of the theme is determined by the overwhelming specialists' interest upon the solution to the problem of elaboration of new generation textiles, and the possibility of these to be worn by the special-needs persons, their number being constantly increasing. This paperwork aims to fundament the theoretical knowledge regarding the classification of the functional materials and establishing their area of use. The main target of this paperwork is also to recommend certain constructive and technical solutions, which shall be taken in consideration while designing clothing products and using innovative textiles. As well we aim to define the field of functional textiles and the field of medical, smart and bioactive textiles. The results of the study will be proven by the chart of classification of functional textiles, and by the solutions given in order to it. The paperwork will present the classification of textiles based on functions, characteristics, areas of use, development stage, types and activity field and the origin of bioactive substance. The medical field of functional textiles is the most important because 2 major directions are presented and both include bioactive materials and smart medical ones. The chart is completed with certain constructive and technical solutions which form their own concepts. The classification chart and the one that determines the area of use are recommended to be taken into consideration in order to facilitate the proccess of textile selection, that are neccessary for functional medical clothing manufacture.*

Key words: *Functional textiles, bioactive textiles, medical textiles, smart textiles*.

1. INTRODUCTION

Textile fibers are used for designing clothes that maintain medical condition, decrease or cure certain conditions, control several body functions, etc.

The variety of textile materials is constantly renewing. In addition, new characteristics of these materials evolve. The industrial experience showed that choosing materials based on scientific criteria is vital because it prooves: product quality, exterior aspect, shape and dimensional stability, resistance to attrition, light maintenance, and last but not the least- handy and comfortable wearing,

factors that represent a complex state of physiollogical and psychollogical matter. Ensuring these factors to clothing will not disturb the person from persuading his activity or rest.

The problem of new-generation textiles elaboration is actual for proffesionals in the field of light industry. Within this context, global and local concerns are highlighted upon textiles meant for persons with different conditions, which play a major role of maintaining the health rate.

2. GENERAL CONCEPTS AND FUNCTIONAL TEXTILES AREAS OF USE

The field of functional textiles is in constant survey and development. A codification of theoretical information regarding defining, classification and the activity areas of textiles are still not available in speciality literature. In order to facilitate the choosing proccess of materials meant for functional clothing, we consider neccessary to, firstly, establish them.

Multiunctional textile fibers are those fibers to which bioactive properties are attributed or those to which electronic devices are attached and allow the connection between the exterior world and on-going activities. Medical textiles serve as a boundary that prevent, decrease, or even cure some medical conditions. The concept "inteligent materials" has developed in the second half of the XXth century and is associated with significant achievements in physics, chemistry, biochemistry, biophysics, material science, etc. With the help of all those science fields, scientists started to imitate, to copy and to develop diverse useful properties for living matter [1]. Under the term of bioactive textiles, a new concept has arisen, which turns the pasive role of the textile fiber into the active one, for both industry and humankind. It is neccessary to promote the use of raw material with superior hygienic standards, antibacterial and anti-allergic features because they protect the ones that work in risky workplaces [2-5].

Functional textiles share a variety of usability and possess detenction and operating functions, which can be efficiently used in medicine, engineering and fashion. Based on scholars and literature of other connex fields, the areas of use of functional materials may be presented in the light of the following graphic (Figure 1).
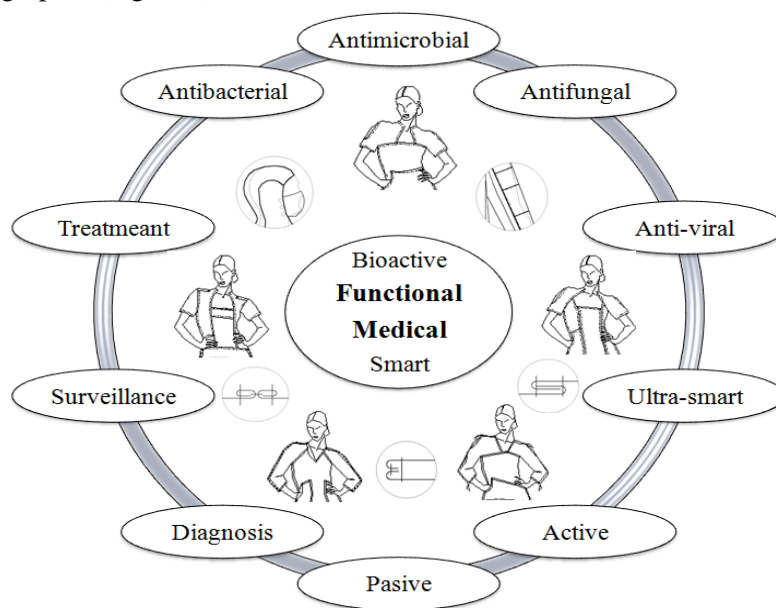
Fig. 1: *Areas of use of medical-functional textiles*

The graphic is completed with multiple constructive and technical products, meant and recommended for persons with diverse chronic illnesses (persons that need permanent health care), shield clothing (antimicrobial, antibacterial, antifungal, antivirucides), and intelligent clothing products.

3. CLASSIFICATION CONCEPT OF FUNCTIONAL TEXTILES

Functions, properties and characteristics of functional textiles require a special classification.

Following, we present chart that classifies the functional textiles, ellaborated as a result of literature research and other connex fields (Figure 2).
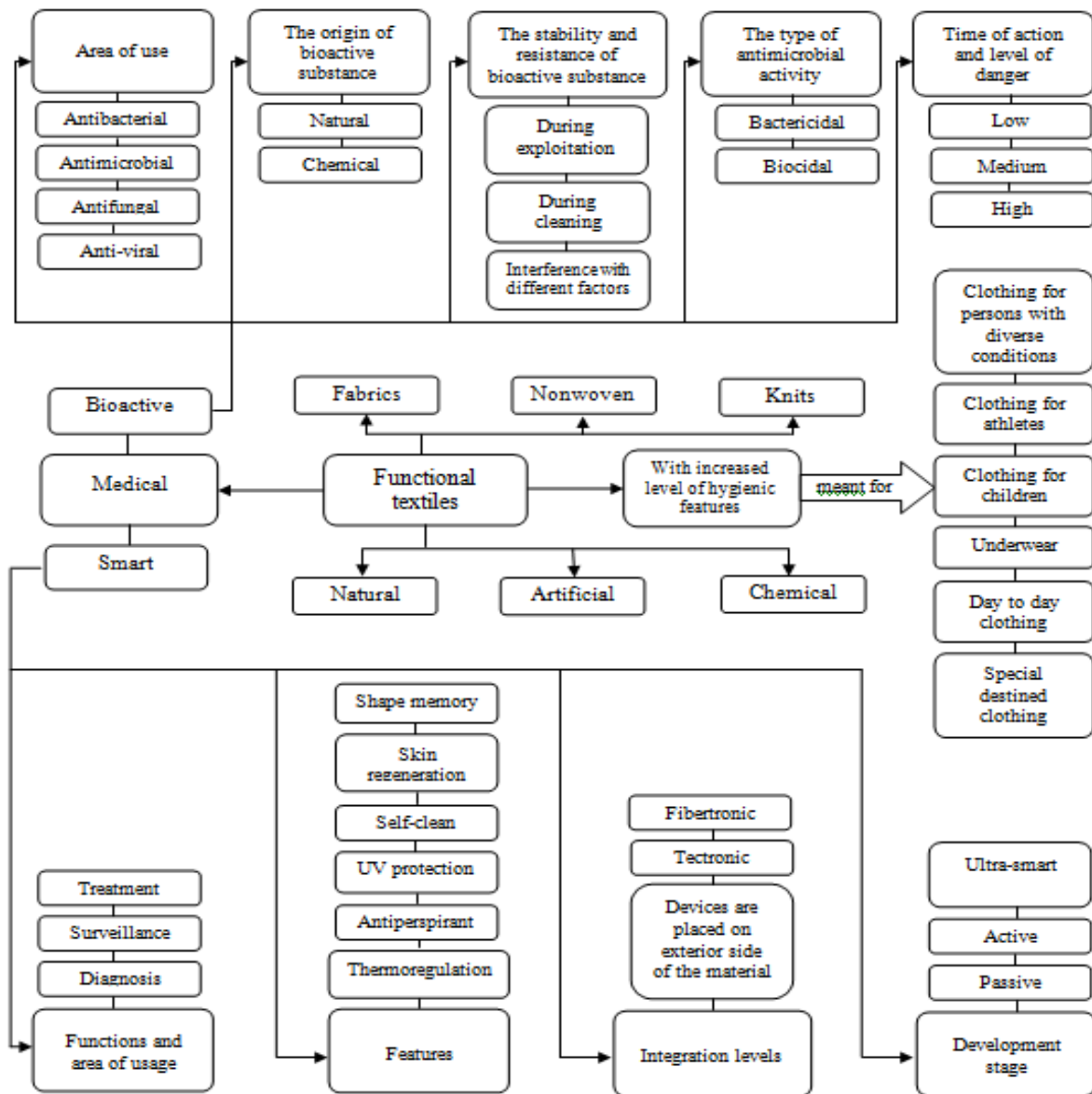
Fig. 2: Classification of functional fibers

4. CONCLUSIONS

The future of textile industry belongs to smart textiles which become more and more accessible to other fields, such as medicine, sports, day-to-day industry. Such innovations aim to increase the life quality for persons with special needs.

By using functional textiles, a chain of problems could be solved, for instance: designing clothing products for persons with special needs and medical goods that can supervise the well-being of the patients or even cure them.

The study proccess and the creation one is quite complex and requires the involvement of many specialists, even professionals from other fields.

Because of the diversity and the progressive emerging of texile field, it is recommended the manufacture to be meant for the disabled persons, according to their requirements, functions, properties, imposed by their area of use.

The following chart will facilitate and encourage the proccess of selecting certain textiles for different clothing, especially destined for medical specialty. Constructive and technical solutions are recommended to be taken into consideration while creating experimental models.

In addition, we propose further researches to be done so that would eventually highlight some models of medical gowns and clothes which will reflect the use of functional available textiles.

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