context

European Network to connect research and innovation efforts on advanced Smart Textiles

IN THIS ISSUE

ABOUT CONTEXT

CONTEXT NEWS

MEMBERS' NEWS

www.context-cost.eu

ABOUT CONTEXT

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CONTEXT brings together European researchers, manufacturers and main relevant stakeholders in order to develop joint ideas and initiatives which can be turned into advanced smart textile products

SMART TEXTILE: functional textile material, which interacts actively with its environment, i.e. it responds or adapts to changes in the environment

CONTEXT AIMS TO

CONTEXT network covers 35 European countries, 3 Near Neighbour Countries and 1 International Partner Country.

The Management Committee is formed by 66 experts in advanced textile materials and related fields.

Promote the development of a joint research roadmap for smart textiles.

Act as stakeholder platform to identify needs and requirements from different points of view in a bottom-up approach.

Foster the transfer of knowledge among different actors in order to find suitable applications in various multidisciplinary fields.

Promote networking activities in order to attract talent, build more and better research projects with more consciousness on the objectives of creating exploitable results.

COST
EUROPEAN COOPERATION
IN SCIENCE & TECHNOLOGY

Funded by the Horizon 2020
Framework Programme of the
European Union

CONTEXT NEWS

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CONTEXT WGs' virtual meetings

Due to the cancellation of the activities planned in the second quarter of the year and of the difficulty to organize face-to-face meetings in the coming months, the leaders of the different groups decided to hold their next meeting virtually. The meetings have taken place between end of June and beginning of July.

The Working Groups bring together European and international experts in the field of textile research and related or complementary areas, as well as professionals from the industrial field. Its objective is to bring together the different research lines that are being carried out in Europe and their alignment with the manufacturing sector and the market, as well as defining joint lines of work.

In total, more than 100 people have participated at the meetings.

More information

CONTEXT was present at the CONTESS conference

Some WG4 members met in Brixen (Italy) during the CONTESS Conference, held from 25th to 26th September.

Dr. Enrico Venturini from Next Technology Tecnotessile, WG4 leader, participated as speaker, by presenting CONTEXT and the Working Group. Other WG4 member, Salvatore Viscuso (from Politecnico di Milano), presented a paper at the conference.

Before the conference, on the 24th, the WG4 members held an hybrid meeting (in-person and online). They discussed on a draft of a Working Group State-of-the art Report which is being prepared to be published, the organization of a training school and about project ideas related to advanced textiles in building and living.

More information
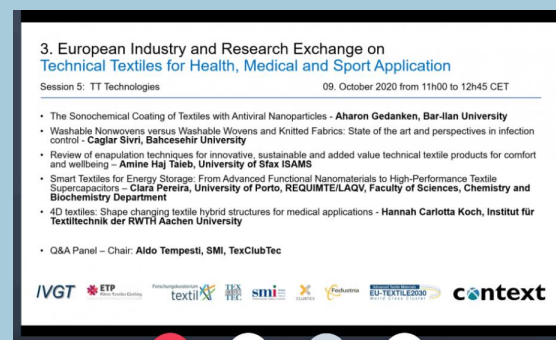
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CONTEXT was present at the 3rd European industry and research exchange

Eight CONTEXT members' presented a paper at the 3rd European industry and research exchange on technical textiles for health, medical and sport applications, which was held online on 8th and 9th October 2020.

This is the second edition of the conference in which CONTEXT collaborates. The last one, was held in Frankfurt, on 15 and 16 October 2019, dedicated to advanced textiles in building and living.

In this 3 rd edition, the conference gathered more than 100 experts in the field of advanced textile materials.

3. European Industry and Research Exchange on
Technical Textiles for Health, Medical and Sport Application
Session 5: TT Technologies   09. October 2020 from 11h00 to 12h45 CET

• The Sonochemical Coating of Textiles with Antiviral Nanoparticles - **Aharon Gedanken, Bar-Ilan University**
• Washable Nonwovens versus Washable Wovens and Knitted Fabrics: State of the art and perspectives in infection control - **Caglar Sivri, Bahcesehir University**
• Review of enapulation techniques for innovative, sustainable and added value technical textile products for comfort and wellbeing – **Amine Haj Taieb, University of Sfax ISAMS**
• Smart Textiles for Energy Storage: From Advanced Functional Nanomaterials to High-Performance Textile Supercapacitors – **Clara Pereira, University of Porto, REQUIMTE/LAQV, Faculty of Sciences, Chemistry and Biochemistry Department**
• 4D textiles: Shape changing textile hybrid structures for medical applications - **Hannah Carlotta Koch, Institut für Textiltechnik der RWTH Aachen University**

• Q&A Panel – Chair: **Aldo Tempesti, SMI, TexClubTec**

IVGT   ETP   textil   smi   Fedustria   EU-TEXTILE2030   context

More information

Two MC members have collaborated to prepare a scientific article on COVID-19 protection with textiles

Aleksandra Ivanoska-Dacikj and Urszula Stachewicz, CONTEXT MC members from North Macedonia and Poland, respectively, have informed about the publication of a scitenfific article they preapred together.

The article, Smart textiles and wearable technologies – opportunities offered in the fight against pandemics in relation to current COVID-19 state, is Open Access.

They present an overview on the use of textiles in the fight against pandemics, in the past and current COVID-19, analyzing the morphology of the commonly used face masks, made of cotton and typically used polypropylene (PP). They present the perspective that smart textiles, wearable technologies and novel materials are offering in the fight against future pandemics, mainly as part of the personal protective equipment and telemedicine.

Read the article

context

AEI Tèxtils

EMERGING INDUSTRIES & VALUE CHAINS

GALACTICA

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 872336

CLUSTER EXCELLENCE

CLAMTEX

CO-FUNDED BY THE COSME PROGRAMME OF THE EUROPEAN UNION

INTERNATIONALIZATION

TEX GLOBAL

CO-FUNDED BY THE COSME PROGRAMME OF THE EUROPEAN UNION

ESCP₄i Partnership

GALACTICA and TEXGLOBAL: two new strategic projects for the cluster

AEI Tèxtils started two new projects on September. The first, GALACTICA, which coordinates, aims to support the creation of new industrial value chains around textile and aerospace based on advanced manufacturing. TEXGLOBAL, led by NTT, aims to promote internationalization in EU textile companies.

Both projects are aligned with CLAMTEX project led by the cluster, which started on February.

This third project completes the strategic framework of the cluster to support advanced textiles' manufacturing companies in Catalonia. The three projects tackle the different strategic needs from the companies in the sector: innovation support (GALACTICA), internationalization (TEXGLOBAL) and strategy (CLAMTEX).

More information

Design FOR and FROM recycling

Design FROM recycling in a multidisciplinary value chain approach. It has been largely proven that the full circularity is idealistic but unachievable. Addressing the limitations of closed loop of materials with the emerging approach of "design FROM recycling," not opposed but complementary to the long-time existing "design FOR recycling" is thus the way forward.

Design FROM Recycling is a rather unexplored subject. In depth knowledge of the (diminished) properties/characteristics of existing recycled material/feedstock, together with the user perceptions on these will allow defining and anticipating successful applications/grades and value chains. To overcome current symbolic low %s recycled content in mixtures with virgin materials, a comprehensive assessment prior to design and the optimisation with material modelling for envisioning new applications are essential. A process of smart deconstruction of complex materials into elementary materials fostering its recyclability in technical applications is an expected impact of the approach.
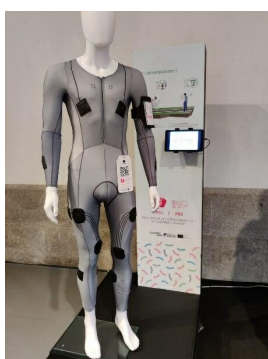
More information

CEFIC – SUSCHEM

SUSCHEM

European Technology Platform for Sustainable Chemistry

cost
EUROPEAN COOPERATION IN SCIENCE & TECHNOLOGY

Funded by the Horizon 2020 Framework Programme of the European Union

PARTNERS' NEWS

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CITEVE - Technological Centre for the Textile and Clothing Industries of Portugal

Texboost PPS1-AN2 – Tools for dematerialization of the conception process of sports clothing

Ending on December 2020 the TexBoost-PPS1-AN2 aims to digitize and dematerialize the physical prototypes in the process of developing clothing for sports (dematerialized modelling of sports apparel). Design and develop technical clothing for sports is a process involving many phases. It is therefore complex and time consuming because it involves a lot of reengineering work and a permanent contact with each athlete/sports modality so that an equipment that corresponds to the real needs of each one was developed.

Two textile sensorized suit capable to gather information like biometric, biomechanical data and movements of the athlete were developed: 1) textile sensorized suit to help the prototype form definition and the properties of the raw materials; 2) textile system for optimizing the performance of cyclists with biometric sensors and real-time capture.

Project developed by CITEVE, P&R Têxteis, LMA, INESC-TEC, FEUP, FADEUP/LABIOMEP, PLUX and co-funded by COMPETE 2020, Portugal 2020 and FEDER.

*Pictures: textile system for optimizing the performance of cyclists with biometric sensors and real-time capture.
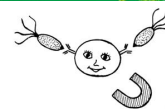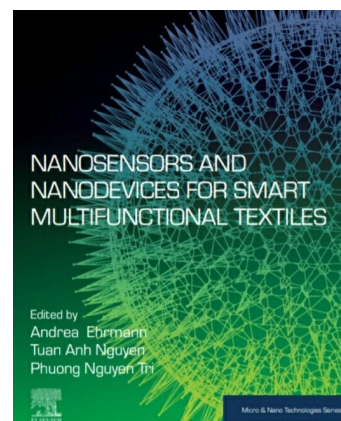
[**More information**]

Magnetic textile solid phase extraction

The research at the Department of Nanobiotechnology is mainly focused on the development and preparation of magnetically responsive materials and their application in various areas of biosciences, biotechnology and environmental technology. Magnetically responsive materials have been successfully used for preconcentration of enormous amount of target analytes from diluted solutions or suspensions using Magnetic solid phase extraction developed in our Department.

The newly developed preconcentration procedure called Magnetic textile solid phase extraction, based on the use of magnetically responsive textile modified with appropriate affinity or ion exchange ligands, enables to preconcentrate target biologically active compounds or pollutants from large volumes of water samples. Adsorbed analytes can be eluted from the textile and subsequently analyzed. Alternatively, image analysis enables elution-free assay of colored compounds. Both procedures can sufficiently lower the limit of detection of target analytes.

[**More information**]

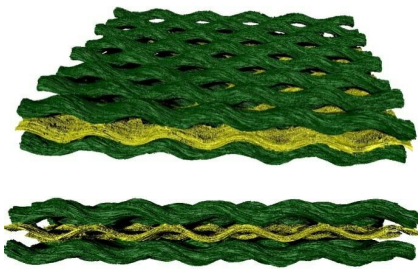## Czech Academy of Sciences. Department of Nanobiotechnology

NANOSENSORS AND NANODEVICES FOR SMART MULTIFUNCTIONAL TEXTILES

Edited by
Andrea Ehrmann
Tuan Anh Nguyen
Phuong Nguyen Tri

context

DITF – German Institutes of Textile and Fiber Research Denkendorf

DEUTSCHE INSTITUTE FÜR
TEXTIL+FASERFORSCHUNG

Multilayer-Woven Piezoelectric Sensors for Continous Component Monitoring of FRP

Delamination of FRP during usage is critical since, usually, delamination cannot be visually recognized. There is a trend for continuous component monitoring. Integration of conventional sensor elements may have negative effect on the mechanical properties of the FRP because of distortion in fiber orientation or even interruption of fibers. DITF's approach is to use the textile reinforcements as a sensor in itself. The 'sensorized' reinforcement structure is obtained by producing a multilayer woven fabric of electrically conductive, electrically insulating and piezoelectric yarns in a certain manner.

The bending test results reveal a direct relationship between the applied load and the sensor signal. Due to the proven dependence between deflection, force and sensor signal, the textile sensors are suitable for detecting bending stress or impacts in composite systems. As the research work shows, piezoelectric sensors can be realized on a purely woven fabric basis and integrated into an FRP.

More information

Chest belt for sleep monitoring at home

Researchers at the Swiss Laboratories for Materials Science and Technology (Empa) and the cantonal hospital St. Gallen (KSSG) are currently running a clinical trial for the investigation of validity and reliability of a chest belt for sleep monitoring. The study includes validation measurements in the sleep lab as well as measurements in a home setting. Besides the measurement of the 1-lead ECG signal by textile electrodes, which has been validated in a previous study (see weblinks for more information), the breathing pattern monitoring based on optical fibres is evaluated in the current study. Preliminary results indicate an acceptable comparability considering data from 17 patients. The mean absolute error for overnight breathing frequency measurement was found to be 0.9 breaths per minute (SD 0.8 bpm).

These results are promising to pursue the vision of a multi-sensor monitoring belt including various vital parameters for a comprehensive sleep monitoring in the home setting.

More information   **More information**

EMPA

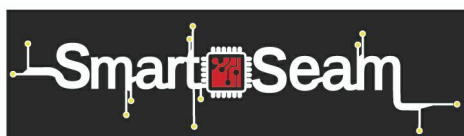Materials Science and Technology

Kantonsspital St.Gallen

context

HOGENT University of Applied Sciences and Arts

Hochschule Niederrhein University of Applied Sciences

SmartSeam Project Kicks off

The project "Sensory and Actuating Functional Seams Applying Hybrid Yarns for the FashionTech Industry" (SmartSeam) started on 27th October with a kick-off meeting in Germany and Belgium, hosted by the research partners Hochschule Niederrhein (FTB) and HOGENT (FTI Lab+) respectively. SmartSeam (CORNET, 2020-2021) is supported by sector associations FKT and Creamoda and benefits of large industry participation across the textile value chain from both countries.

SmartSeam will use well established technologies in textile and clothing industry to add sensory and actuating functionalities into clothing seams. Conductive sewing threads and conductive hybrid yarns with various architecture will be integrated in special designs into clothing seams using conventional or specialized sewing machines. Light emitting seams, body posture tracking or body temperature and humidity changes detection are the seam functionalities envisaged. The clothing protypes addresses three growing markets namely fashion with electronic functionalities, sport clothing, workwear and protective clothing.

More information

Maturolife Project launched the pilot line for the production of smart textile prototypes

Maturolife project is led by Coventry University (UK) and involves 20 including IFTH and Bertin Aubert Industries from France.

MATUROLIFE takes an alternative approach to introducing electronic connectivity to textiles. During the project, special catalysts are developed that can be selectively deposited onto textiles enabling subsequent metallisation processes to fully coat fibres within the textiles. The feel and drape of the textile is maintained while the material can still be bent and twisted in the same way as a conventional textile.

One of the workpackage of the project consist to determine feasibility of industrial scale-up of selective metallisation processes. In September, the built pilot line is performed and the first trials are done successfully on the textile prototypes.

Furthermore, for the maturolife consortium road-mapping event is launched virtually because of the pandemic. GEDs designed a digital experience from scratch for the virtual environment by using strategic design tools and methods.

More information

IFTH - Institut Français du Textile et de l'Habillement

context

InnoRenew CoE

Webinar series in the frame of the FAÇADE project

The FAÇADE Project aims at developing a competitive and sustainable bio-sourced anti-UV coating to protect wooden façades, using bio-carbon as UV-absorber. Bio-carbon is a carbon-based product obtained from thermal decomposition of organic materials at elevated temperatures (greater than 300 °C). Hence the carbonization process can create new materials with great added value and interesting properties from agricultural or forestry industries wastes that currently have little or no economic value.

Within the frame of the project, a webinar series has been launched in December, with various topics related to sustainable materials, environmental impact of eco-friendly solutions, new trends for facade materials, etc.

More information

Internet of textiles production and visiting researcher at EMPA, Schwitzerland

The research on 4D textiles, textiles that can change shape or function over time, is part of the Cluster of Excellence "Internet of Production" (IOP), a large scale research project at RWTH Aachen University where data from production, development and use are combined in such a way that they are available in real time, at all times. The textile industry is an ideal test area for IoP developments due to its complex supply chain. In the project we inverstigate the use of agile prototyping to define agile textile product development. 4d textiles are produced with 3d printing on textile making it a versatile production process for several applications such as medical or sports applications.

To investigate laser welded textile integrated electro-mechanical systems for assistive devices in medical application Martin Seidenberg, research fellow of ITA, will join the EMPA research group for one month in beginning of 2021 through Context action.

More information

ITA - Institute for Textiles Technology of RWTH Aachen

ITA Institut für Textiltechnik und Lehrstuhl für Textilmaschinenbau

RWTHAACHEN UNIVERSITY

4D Textiles

1010 Programmable   Data storage   Connected

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JOANNEUM RESEARCH Forschungsgesellschaft mbH – Materials

FFG-funded project on optical sugar sensors using textile materials

The Austrian funding organisation FFG has recently approved our project "GlucoVin" which focusses on opto-chemical sensing methods for a continuous monitoring of the sugar content during fermentation, raising the production processes in vine fermentation on the level of modern standards in industry 4.0. Within the project, new indicator dyes for fructose and glucose will be synthesized and covalently linked to cellulose fibres and textiles. The fluorescent fibres are embedded into a binder polymer and deposited as sensor layers.

More information

CLEANTEX project kicks off

CLEANTEX project started on 4th November with a virtual meeting.

CLEANTEX aims to develop customized training materials for companies and university students in the textile sector about circular economy and eco-design to boost their innovation potential to thrive sustainable solutions. It is aligned with the renewed Circular Economy Action Plan and the new Industrial Policy released on March 2020.

In this context, the CLEANTEX project will develop the tools for the upskilling of the textile sector and particulary higher education students.

CLEANTEX partnership, led by Kaunas University of Technology, brings together 8 institutions from 6 European countries with complementary profiles and competencies. The partnership includes universities, training centers, technological centers and non-profit institutions.

More information

KTU - Kaunas University of Technology

context

Next Technology Tecnotessile

Tuscany Fashion Cluster

EXTRATEX partnership announce the first VIRTUAL EXCHANGE PROGRAMME

EXTRATEX partnership between textile, automotive and plastic sectors is happy to announce the first fully VIRTUAL EXCHANGE PROGRAMME. The Virtual Exchange is an exclusive 3 days event, implemented online, where visiting organisations can discover at close distance the opportunites offered by Slovak plastic sector. SPK, The Slovakia Plastic Cluster, will host the event and showcase specialties, innovative technologies, products and commercial opportunities offered by local companies and institutes.

SPK and its companies will open their vitual doors to enter the production departments and their competencies for one full day. The second day will be dedicated to B2B meetings, that visitors can book with the Slovak actors on a dedicated e-platform. The third day will see an interactive workshop, mainly based on biomaterials, with experts and facilitators able to involve participants and bring cross-sector cooperations one step further. The details of the Virtual Exchange will be available soon of EXTRATEX website.

More information **More information**

SGAMR Young Researcher Award & SGAMR Best Paper Award

The SGAR EditorialBoard is pleased to announce the inauguration of the yearly "SGAMR Young Researcher Award" (SGAMR-YRA) and the "SGAMR Best Paper Award" (SGAMR-BPA).

The best papers will be selected by a journal committee, from the Editorial Board. A special attention will be given to the originality and novelty of the paper content, and where possible, also to its immediate impact (citations, downloads, visualizations). All the published papers are automatically included in the list of papers to evaluate. Both the awards include a certificate and two years of free-of-charge publication in SGAMR (peer-reviewed Research Articles or Review Articles).

The winner will be announced every January, on the journal website.

The International Journal of Structural Glass and Advanced Materials Research (ISSN: 2616-4507 (Print), ISSN: 2616-4515 (Online); Int. J. Struct. Glass Adv. Mater. Res. – SGAMR) is an international, peer-reviewed, open-access journal, published by Science Publications.

More information

Science Publications

INTERNATIONAL JOURNAL OF
Structural Glass &
Advanced Materials
Research

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Sofia University St. Kliment Ohridski

Surface modified textile materials with microbiological activity

Based on the participation of Prof. Ivo Grabchev, as a MC member in COST action CA 17107 in WG1, national funding was received from the Fund "Scientific Research", Ministry of Education and Science of Bulgaria, Grant Number: КОST-КП-19.

With the development of the project, new dendrimers and branched polymers have been synthesized. They have been loaded on the surface of cotton fabric and their microbiological activity was investigated. These textile materials have been found to have antibacterial properties with low cytotoxicity.

More information

AEROTEX: towards more efficient thermal insulation solutions for sports, buildings and personal protective equipment

The AEROTEX project, put together within the framework of a working group bought and labelled by Techtera, is supported by the Auvergne-Rhône-Alpes region as part of the R&D Booster program. It concerns the development of new industrial manufacturing processes for flexible high performance textile materials.

AEROTEX, led by FIBROLINE, brings together 6 industrial partners and laboratories working to develop new industrial manufacturing processes for high performance flexible textile materials for three important application markets: PPE, outdoor sports, and construction.

The companies MILLET MOUNTAIN with the brands Millet and Lafuma (sport), BALSAN (PPE) and P.E.G. (Building) are collaborating with technology suppliers: ENERSENS (innovative insulating materials), FIBROLINE (dry impregnation technology) and CETHIL (centre for energy and thermal sciences). The products developed should bring real progress in the field of insulation, in markets which require both advanced technicality and materials highly adapted to use, with increased conformability, lightness, durability, comfort, and ease of use.

More information

Techtera - The French innovation cluster dedicated to textiles

techtera

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Technical University of Varna

International Conference on Biomedical Innovations and Applications (BIA-2021)

We invite you to participate in the *International Conference on Biomedical Innovations and Applications* (BIA-2021), to be held on Sept. 16-19, 2021, in Varna, Bulgaria. We also offer online participation due to the COVID-19 outbreak and the expected long-term travel and accommodation restrictions.

Conference Topics include Bioelectronics and Biomedical Engineering Applications, Biomedical Applications of Smart Textiles, Biosensors and Personal Sensor Networks, Healthcare Applications, Innovative Materials in Biomedical Engineering, Smart Systems, Wearable Technology and Innovations and other.

Prospective authors are invited to submit original work of up to 4 pages (A4) following the standard IEEE double-column conference format. The BIA-2021 proceeding will be submitted for inclusion in IEEE Xplore Digital Library and indexed in SCOPUS.

More information

International Conference on
Biomedical Innovations and Applications
Varna, Bulgaria
September 16 - 19, 2021

Open Call for ICNF2021 – 5th International Conference on Natural Fibers

UMinho – Fibrenamics

From 17 to 19 May 2021, Fibrenamics will present the fifth edition of the International Conference on Natural Fibers in a hybrid model. Participants will be able to travel to Funchal on Madeira Island or participate online. The ICNF conference is internationally recognized as a leading event in scientific innovation in materials based on natural fibers. More than 500 international researchers have already presented their work in this area to an audience of hundreds of universities, research centers and multinational companies.

The 2021 edition will focus on 'Materials of the Future' in a moment when the international community is trying to minimize the environmental impacts of global industrialization and find solutions to the scarcity of natural resources.

The call for papers to be presented at the conference is open and all interested researchers can submit their abstracts on the ICNF2021 website.

More information

Universidade do Minho

Fibrenamics

ICNF 2021
Materials of the Future
17.18.19 MAY 2021
Funchal, Portugal & Online
Call for Abstracts OPEN

PARTNERS' NEWS

context

University of Sfax

Kasta Morrely Organisation from Romania

Intercultural Association for All

Fashion Sustainability in the spotlight, new trends of Intercultural Learning

Within Creative Europe Programme, this project is grounded on the concept of increasing the level of fashion literacy and educational value of professional fashion through an integrated approach of intercultural leaning towards sustainability in fashion. The partners are Kasta Morrely from Romania, University of Sfax (Higher institute of Art and Craft in Sfax) from Tunisia and Intercultural for All from Portugal.

The project aims to support capacity building and audience development in fashion by enhancing sustainable fashion awareness, creative and intercultural competences in the fashion domain through non-formal education and fashion performing arts, valuing the social modernization and culture preservation.

The project will bring performance in the fields of creative industries by structured development of new forms of artistic expression, encouraging awareness of the benefits of the collaboration of specialists and artists from various cultural fields with focus on the performing arts, sustainable fashion design, intercultural learning, formal and non-formal education.

Smart-Textile for Power Solution of wearable sensor-PowerTex

Wearable electronics based on smart-textile technology has been regarded as the most interactive human skin due to its unique features and excellent performances. Therefore, it is frequently used to detect physiological parameters particularly in the field of biomedical and health monitoring, implants and prosthesis, motion tracking, artificial intelligence, and human-computer interaction etc. Nevertheless, the major constraint of smart-textile sensor and electronic is to power them using traditional battery system, which is not compatible in terms of bulky size, weight, ineffective in flexibility, stretchability, breathability, washability etc. Hence, the energy source and thereby producing self-power sensor from textile itself is critically important for now. The project "Powertex" coordinated by V-trion GmbH has exploited textile-based energy supply and self-powered sensor utilizing environmental waste energy as sources e.g; motion or movement. Textile harvester was able to generate power to lighten over 30 LED just by hand tapping, whereas the self-powered sensor was also capable to detect human respiratory signal.

More information

VTRION