01:

Azeem, M., Ahmad, Z., Wiener, J., **Fraz, A.,** Siddique, H. F., & Havalka, A. (2018). Influence of Weave Design and Yarn Types on Mechanical and Surface Properties of Woven Fabric. *Fibres & Textiles in Eastern Europe, 26*(1(127)), 42-45. doi: 10.5604/01.3001.0010.7795. **(Ahmad Fraz (STD), JCR Listed (IF: 0.626))**

Abstract: The purpose of this study was to examine the effect of spinning technologies and weave design on fabric mechanical and surface properties. For this purpose, ring spun (combed, carded) and open-end (OE) techniques were used to manufacture yarns of polyester cotton (50:50) which were used in the weft, and 100% cotton yarn in the warp. Plain, twill, and satin weave designs were selected to construct woven samples on a projectile loom. The variation in fabric tensile strength is obvious with respect to weave designs. Higher interlacing of yarn produces more crimp in the load bearing, which may cause lower breaking strength and fewer broad floats. The mechanical and surface properties of these fabric samples were investigated and statistical analysis was performed, which showed a significant effect of the spinning technique and weave design on these properties.

Keywords: PC yarn, ring spun, open-end, weave design, abrasion, pilling.

02:

Zahra, Q., Mangat, A. E., Fraz, A., Hussain, S., Abbas, M., & Mukhtar, U. (2018). Air, moisture and thermal comfort properties of woven fabrics from selected yarns. *Industria Textila, 69*(3), 177-182. **(Qurbat Zahra (STD), Ahmad Fraz, Sajid Hussain, Mudassar Abbas, Umair Mukhtar, (JCR Listed))**

Abstract: Air and moisture transport properties of plain woven fabric made from 20sNec cotton in warp and 20sNec pure yarns of tencel, modal, pro-modal, bamboo, polyester and cotton yarn inweft direction are studied. Major characteristics added for this study include water vapour permeability, air permeability, wettingtime and wicking speed. In comparison of six different samples of variously composed materials in weft direction, the air permeability of tencel was minimum and polyester was maximum, whereas the reverse results were observed for both the samples in case of water vapour permeability. Among the blends with cotton, thermal conductivity of bamboo and thermal absorptivity of polyester was found maximum whereas the minimum thermal resistance was observed for pro modal yarn in weft. Similar pattern was observed in spreading speed and wetting time of the polyester when observed from either side top or bottom. Air and moisture comfort properties of bamboo and pro modal, having nearly similar values are suggested to be used in garments used for golf players.

Keywords: moisture management properties, water vapour permeability, air permeability, wetting and thermal comfort properties.

03:

Raza, Z. A., & **Anwar, F.** (2018). Fabrication of poly (lactic acid) incorporated chitosan nanocomposites for enhanced functional polyester fabric. *Polímeros, 28*(2), 120-124. **(Faiza Anwar (STD), (SJR Listed))**

Abstract: This study dealt with the fabrication and analysis of poly(lactic acid) (PLA) mediated chitosan nanocomposite. Such a novel nanobiocomposite may get future applications in drug delivery, and nanofinising of textile and polymer surfaces. Herein, this nanocomposite has been considered as an antibacterial finishing agent for a hydrophobic textile fabric like polyester. The prepared nanocomposite was characterized for zeta size and morphology, and subsequently applied on a woven polyester fabric though a coross linker. The treated polyester fabric was analyzed for textile functional characteristics as well

asantibacterial activity. The spectral and optical properties demonstrated that the nanocomposite developed exhibited spherical morphologies with a mean nano particle size of ca. 88 nm. The treated fabric projected satisfactory antibacterial and fair fabric attributes. Hence, the nanofinished polyester fabric is a potential biocompatible candidate as medical and antibacterial textiles in addition to be used in antibacterial water filtration and materials packing.

Keywords: antibacterial, chitosan, cotton fabric, nanocomposite, PLA.

04:

Abbas, M., Neubauer, M., & Slugovc, C. (2018). Converting natural rubber waste into ring-opening metathesis polymers with oligo-1, 4-cis-isoprene sidechains. *Polymer Chemistry, 9*(14), 1763-1766. doi: 10.1039/C8PY00233A. **(Mudassar Abbas (STD), JCR Listed (IF: 5.25))**

Abstract: A chemical recycling of natural rubber waste *via* a degradation/polymerisation approach is described. The vulcanized rubber waste was degraded by cross metathesis with ethyl acrylate as the key-step yielding enoate end-capped oligo-*cis*-isoprenes, which were subsequently converted into norbornenes *via* a cycloaddition reaction with cyclopentadiene. Ring-opening Metathesis Polymerisation (ROMP) then yielded main-chain unsaturated polymers bearing oligo-1,4-*cis*-isoprene side chains with appealing thermal stability and a glass transition temperature of −60 °C.

05:

Abbas, M., Iftikhar, H., Malik, M. H., & Nazir, A. (2018). Surface Coatings of TiO2 Nanoparticles onto the Designed Fabrics for Enhanced Self-Cleaning Properties. *Coatings, 8*(1), 35. **(Mudassar Abbas (STD), Hina Iftikhar, Mumtaz Hasan Malik, JCR Listed (IF: 2.175))**

Abstract: Herein, the hydrophobic and self-cleaning properties of three different fabric surfaces have been evaluated after applying titanium dioxide (TiO2) nanofinishes. The nanoparticles were prepared by sol-gel techniques and were characterized by using X-ray diffraction (XRD), scanning electron microscopy (SEM) and dynamic light scattering (DLS) methods. The ultra-refined particles were applied over three different fabric substrates having similar weave of Z-twill (3/1). The yarns of 100% polyester, blend of viscose with mod-acrylic and high performance polyethylene containing 16 yarn count (Ne) and 31.496 and 15.748 ends/cm and picks/cm, respectively, were used for required fabric preparation. The different fabric structures were applied with self-cleaning finish of TiO2 nanoparticles prepared in our laboratory and the results were compared with commercially available finish Rucoguard AFR. The static contact angles, UV-protection factor, air permeability and hydrophobic activity of nanofinished fabric helped in evaluating their breathability and self-cleaning properties.

Keywords: TiO2 nanoparticles, hydrophobic coatings, self-cleaning, air permeability and UV-protection factor.

06:

Qazi, A. M., Manzoor, A., Sitara, A., & Abbas, M. (2018). Importance of Draping in Fashion clothing Industry *Current Trends Fashion Technol Textile Engineering, 2*(2), 1-3. doi: 10.19080/CTFTTE.2018.02.555581. **(Adil Masood Qazi (STD), Amna Manzoor, Anika Sitara, Mudassar Abbas)**

Abstract: Draping till date is a technique in fashion couture that has proven itself as an irreplaceable procedural step. The ready-to-wear collection involves a set pattern in a work flow, starting from visualization of conceiving an idea to presenting the final collection. The world today has intelligently added modern technology as the problem-solving solution. The integral part of draping in fashion couture has a

proud and influential history. The modern designers understand draping as an essential methodology that leads to manufacture a flawless pattern. The article will explore the history of draping as an art-form that influences contemporary trends and usage.

Keywords: Design, Draping, Folds, Garment, Fabric, Fashion, Couture.

07:

Ahmad, F., Tausif, M., **Hassan, M. Z.**, Ahmad, S., & Malik, M. H. (2018). Mechanical and comfort properties of hydroentangled nonwovens from comber noil. *Journal of Industrial Textiles, 47*(8), 2014-2028. doi: 10.1177/1528083717716168. **(Mumtaz Hasan Malik (STD), (JCR Listed))**

Abstract: Cotton is one of the most important commodity fibres and is widely employed in apparels. At present, the share of natural fibres in production of nonwoven fabrics is low and are used in opt applications. The cotton fibre is conventionally converted into woven and knitted fabrics by short staple spinning methods. The comber noil is short fibre waste produced when cotton yarns are combed. The aims of the current study were to employ comber noil for the preparation of hydroentangled cotton nonwovens at varying water jet pressures and conveyor speeds. The effect of these parameters was studied with respect to mechanical and comfort properties of the prepared fabrics. The results showed that these variables can help to manufacture fibrous assemblies with engineered properties, according to required application area.

Keywords: Cotton, comber noil, hydroentanglement, nonwovens, mechanical, comfort.

08:

Hussain, Z., Arslan, M., **Malik, M. H.,** Mohsin, M., Iqbal, S., & Afzal, M. (2018). Integrated perspectives on the use of bacterial endophytes in horizontal flow constructed wetlands for the treatment of liquid textile effluent: Phytoremediation advances in the field. Journal of Environmental Management, 224, 387-395. doi: 10.1016/j.jenvman.2018.07.057. **(Zahid Hussain (STD), Mumtaz Hasan Malik, (JCR Listed))**

Abstract: Constructed wetlands (CWs) have emerged as cost-effective and sustainable treatment systems for the remediation of industrial wastewaters; nevertheless, their potential has mostly been evaluated in laboratory-scale studies. Likewise, endophytic bacteria can enhance plant growth and reduce phytotoxicity under polluted conditions, but their application with pilot-scale CWs has rarely been evaluated. The present study aims to evaluate on-site performance of endophyte-assisted pilot-scale horizontal flow constructed wetlands (HFCWs) for the remediation of effluent from a textile industry. The HFCWs were established by planting Leptochloa fusca in the presence of three endophytic bacterial strains with dye degrading, and plant growth promoting capabilities. We found that the system was able to remove a significant proportion of both organic and inorganic pollutants. Maximum reduction of pollutants was observed in endophyte-augmented HFCWs, where the COD and BOD reduced from 493 to 70 mg l−1 and 190 to 42 mg l−1, respectively, within 48 h. Additionally, survival of endophytic bacteria in different components of the HFCWs was also recorded. Treated wastewater was found to be non-toxic and the inoculated bacteria showed persistence in the wastewater as well as rhizo- and endosphere of L. fusca. Accordingly, a positive impact on plant growth was observed in the presence of bacterial augmentation. The system performance was comparable to the vertical flow constructed wetlands (VFCWs) as high nutrients reduction was seen in the presence of this partnership. This pilot-scale study is a step forward toward the field-scale application of phytoremediation coupled with bacterial endophytes as a cost-effective means of on-site wastewater remediation. To the best of our knowledge, this is among the first pilot-scale studies on use of HFCWs for improvement in quality of textile industry effluent as most previous studies are limited either in the context of engineering or lack effective interplay of plant and bacteria.

Keywords: TiO2 nanoparticles, hydrophobic coatings, self-cleaning, air permeability and UV-protection factor.

09:

Hussain, Z., Arslan, M., **Malik, M. H.,** Mohsin, M., Iqbal, S., & Afzal, M. (2018). Treatment of the textile industry effluent in a pilot-scale vertical flow constructed wetland system augmented with bacterial endophytes. *Science of the Total Environment, 645*, 966-973. doi: 10.1016/j.scitotenv.2018.07.163. **(Zahid Hussain (STD), Mumtaz Hasan Malik, (JCR Listed))**

Abstract: A pilot-scale vertical flow constructed wetland (VFCWs) system was designed, implemented and operated for one year for the treatment of dye-rich real textile effluent. Brachiaria mutica was vegetated to develop VFCWs in which five different textile effluent degrading endophytic bacteria were inoculated. These bacteria were screened based on their dye degrading and plant growth promoting capabilities. The system's performance was evaluated by monitoring physicochemical parameters, nutrients removal, heavy metals reduction, detoxification potential, and persistence of endophytic bacteria in the plant rhizo- and endosphere. Although VFCWs were able to remove a majority of the pollutants from the wastewater, bacterial augmentation further enhanced the remediation efficiency. The system promoted an increase in dissolved oxygen up to 188% and, concomitantly, a substantial decrease in the chemical oxygen demand (81%), biochemical oxygen demand (72%), total dissolved solids (32%), color (74%), nitrogen (84%), phosphorous (79%), and heavy metals [Cr(97%), Fe(89%), Ni(88%), Cd(72%)] was recorded. Wastewater treated with VFCWs augmented with bacteria was found to be non-toxic and inoculated bacteria showed persistence in the root and shoot interior of B. mutica. Conclusively, VFCWs proved to be an effective methodology for treatment of textile effluent whereas its smaller size with high efficiency is an advantage for field-scale applications.

Keywords: Endophytes, Phytoremediation, Pilot-scale, Plant-bacteria partnership, Textile industry, Wastewater.

10:

Raza, Z. A., **Anwar, F.,** & Abid, S. Multi-response optimization in impregnation of chitosan nanoparticles on polyester fabric. *Polymer Bulletin*, 1-20. **(Faiza Anwar (STD), (SJR Listed))**

Abstract: A Taguchi design was employed to optimize the recipe for in vitro antibacterial activity of polyester fabric treated with chitosan nanoparticles (CNPs), which were prepared using sodium tripolyphosphate as cross-linker under ionic gelation method. The CNPs treated polyester fabric with recommended recipe under Taguchi design showed about 5 mm zone of inhibition against E. coli and 5.5 mm against S. aureus. Scanning electron microscopy installed with an energy-dispersive x-ray detector was used to observe the morphology and presence of CNPs on the treated fabric. Based on statistical design, it was found that optimum process conditions were 15 g/l of CNPs, 90 g/l of cross-linker and 140 °C curing temperature. Analysis of variation indicated that the concentration of CNPs and cross-linker signifcantly afected the antibacterial properties of polyester fabric. Finally, a validation run confrmed the authenticity of proposed recipe. The polyester fabric showed good antibacterial activity with minimum loss of its inherent textile properties.

Keywords: Antibacterial, Chitosan, Polyester fabric, Nanoparticles.

11:

Hussain, S., Glombikova, V., Akhtar, N., Mazari, A., Mansoor, T., & **Khan, K. A. H.** Liquid Moisture Transportation Properties of Functional Underwears: Part 1. *Autex Research Journal*. **(Kanwar Ali Haider Khan (STD), (SJR Listed))**

01:

Abbas, M., & Iftikhar, H. (2018). *Synthesis of Advanced Textile Functional Materials Using Titanium Dioxide Nanoparticles for Self-cleaning Applications*. Paper presented at the 1st International Conference on Advances in Engineering and Technology (ICAET-2018), Quetta, Pakistan. **(Mudassar Abbass, (STD), Hina Iftikhar)**

Abstract: Due to their predefined size and shape, nanoparticles have gained much attention for material development in daily life applications. In textile industry, the modifying of conventional textile is required that can alter the entire property of the textiles. Therefore, it was need to develop a fabric which is antimicrobial and selfcleaning as well as protective against UV-irradiation without compromising the comfort of the fabric. Herein, the silver and titanium nanoparticles prepared via simple synthetic routes in a chemical laboratory are loaded in the commercial finishes for textiles to yield antimicrobial characteristics. The finished fabric constituted of 100% polyester, and blends of mod-acrylic and high performance polyethylene with viscose was generated by keeping in mind the upholstery applications. The product designed through this process can be used in many domestic and commercial applications including medical textiles. The nanoparticles are characterized via X-ray diffraction and Dynamic Light scattering analysis and overall antimicrobial characteristics of textile materials are evaluated by using standard methods. The characterized nanoparticles of 68nm (on average) in presence of binders are coated over the fabrics with modified structures via pad-dry-cure method. The nano-coated functional textiles yielded good air-permeability, moisture comfort properties, hydrophobicity (evaluated through contact angle measurement) and UV-protection factor (for coloured fabrics only). The whole textile material was also evaluated against gram negative and gram positive bacteria for its antimicrobial characteristics. Novel textile finishes using common laboratory chemicals have been developed and it is believed that these finishes contain excellent fabric comfort properties.