

10% after fatigue for fabrics with fancy yarns with bosses as well as when arcs, and open and closed loops are formed, with knots occurring in some places.

- The elongation at break of fabrics in the warp direction increased for some variants of fabrics (variants 1 - 3, 5 - 9) and decreases for others (variants 4, 10 - 14). The biggest increase is estimated for fabrics with fancy yarns having waves and spiral structures. The elongation at break of fabrics in the weft direction after fatigue increased for almost all fabric variants investigated.
- It was estimated that the stress-strain curves of tensile tests of the fabrics with fancy yarns investigated have similarities dependent on their structure, which is primarily caused by the overfeed. Moreover in the distribution of values of mechanical indices, similar regularities were established.
- Using criterion  $F$ , it was established that the mathematical models of the dependencies of the elongation at break of fabrics in the weft direction before and after fatigue upon the independent variables of manufacturing fancy yarns were suitable for further interpretation.
- The elongation at break before and after fatigue changed very similarly. With increasing the overfeed, when the rotational rate of the hollow spindle has a stationary point, the parameters of optimisation decrease and then start to increase.
- The tendencies to change the elongation at break established by us can help to design fabrics containing fancy yarns with the best resistance to flexing.



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# UNIVERSITY OF BIELSKO-BIAŁA

## Faculty of Textile Engineering and Environmental Protection

The Faculty was founded in 1969 as the Faculty of Textile Engineering of the Technical University of Łódź, Branch in Bielsko-Biała. It offers several courses for a Bachelor of Science degree and a Master of Science degree in the field of Textile Engineering and Environmental Engineering and Protection.

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University of Bielsko-Biała  
Faculty of Textile Engineering  
and Environmental Protection  
ul. Willowa 2, 43-309 Bielsko-Biała  
tel. +48 33 8279 114, fax. +48 33 8279 100  
E-mail: itimp@ath.bielsko.pl