and exploration of heterophase composites were obtained. However, well-known studies were carried out mainly for the case of quasi-static loading of materials. The effects of strain rate influence on the strength of composites with bent fibers have been studied to a much lesser extent, although they have also been considered. Analytical and numerical models are proposed to take into account the effects of curved stacking and the effect of fiber curvature. Some applied models, in particular, are used in standard software packages for finite element modeling. The buckling effects of fibers, even in the case of ideal straight-line packing, leads to a decrease in the compressive strength in relation to the ultimate tensile strength of the fiber composite by more than 1,5 times.

## V. Conclusion

As a result of the studies carried out, it was shown that the in situ method of obtaining CuLLDLP nanocomposites makes it possible to obtain highly dispersed nanoparticles and achieve their more uniform distribution in the polymer matrix, which is reflected, as demonstrated, in improved deformation and strength characteristics of the materials obtained. The optimal concentration of Cu nanofiller was found to be 2-5%, allowing to achieve the best mechanical properties. The relationship between the filler content and the modulus of elasticity/tensile strength has been determined. With an increase in the filler content, the elastic modulus increases by 10-20%, and the tensile strength decreases by 30%. Elongation at break for samples with nanofiller content up to 3 wt. % higher than unfilled polymer.

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