

II INTERNATIONAL CONFERENCE
Krasnoyarsk-St Petersburg, RUSSIA
3-6 March 2021



«Metrological Support of Innovative Technologies» ICMSIT-II 2021

«The application of 3D printing systems in the bachelor's engineering educational process »

I.V. Kovalenko, A.S. Amuzade, A.V. Bobrov, R.A. Petukhov



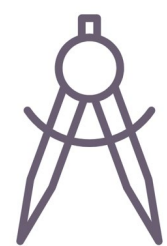
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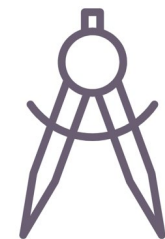
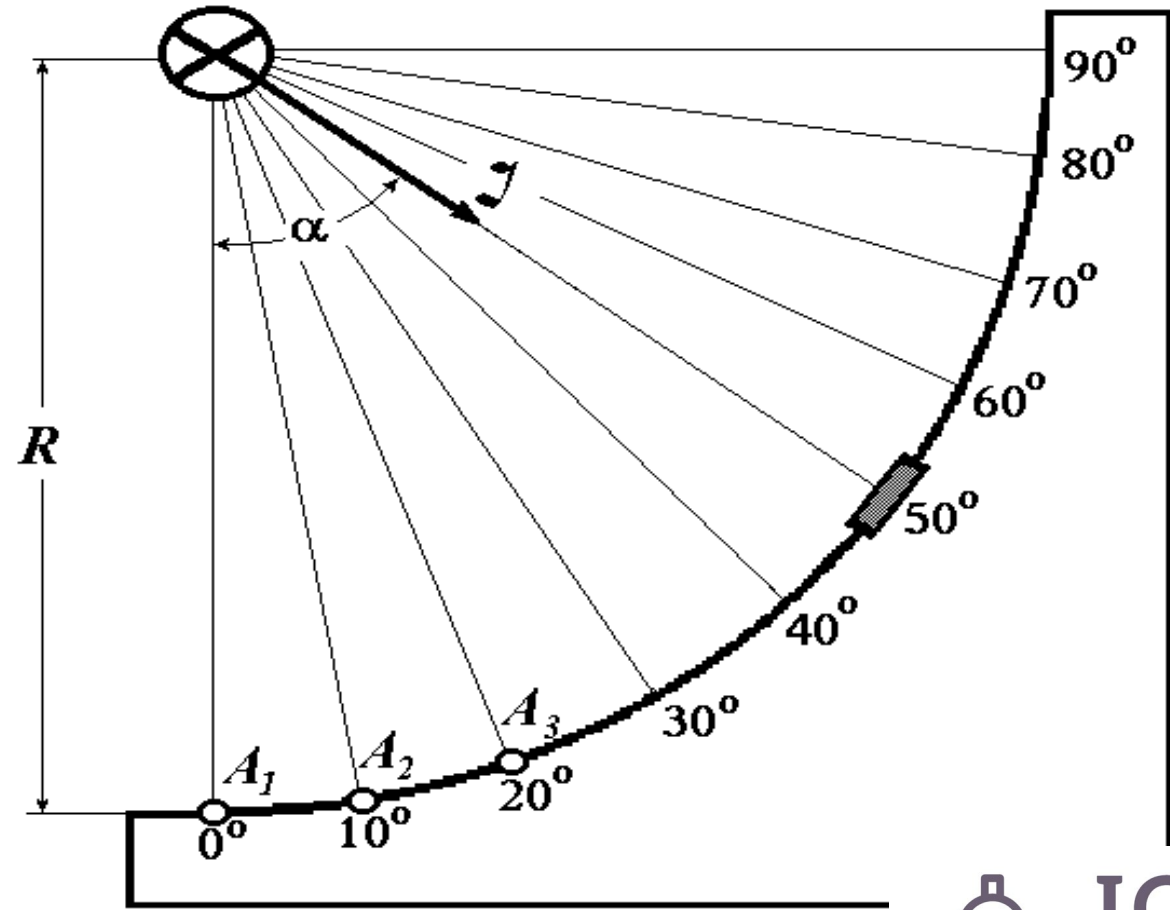
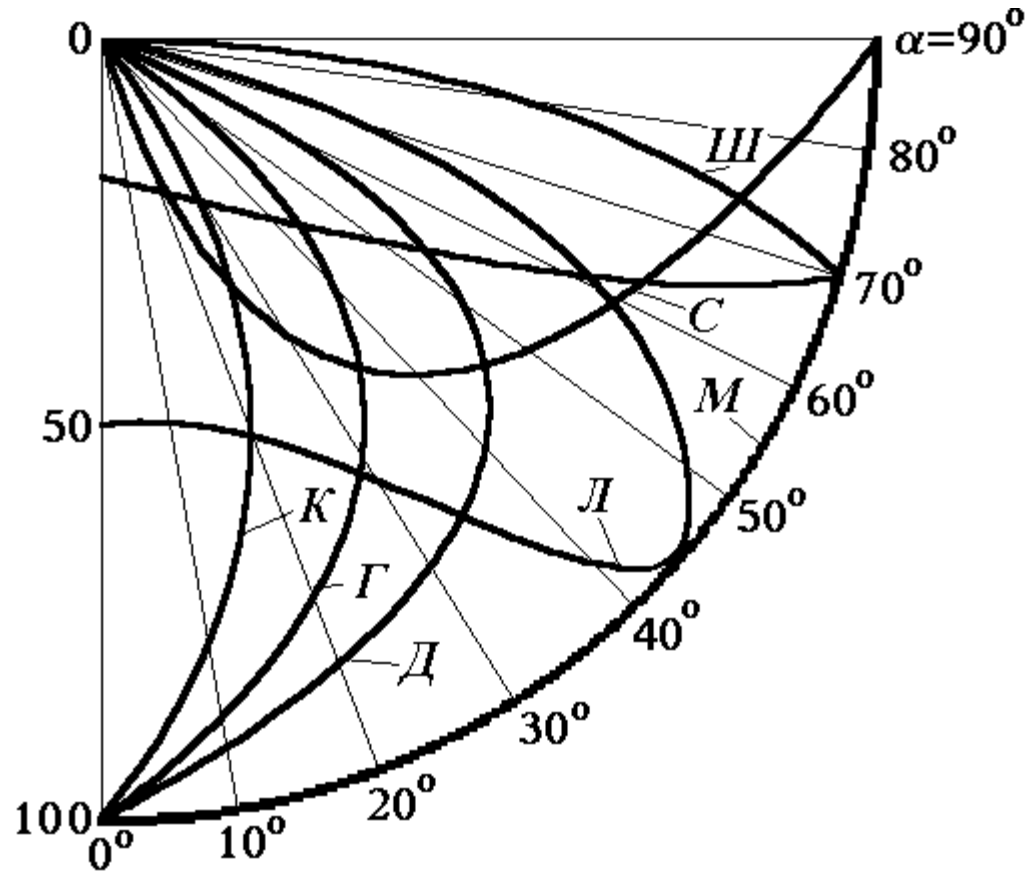
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Study case of the effect of luminous flux inclination on illumination



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requirements for light sources established by regulatory literature

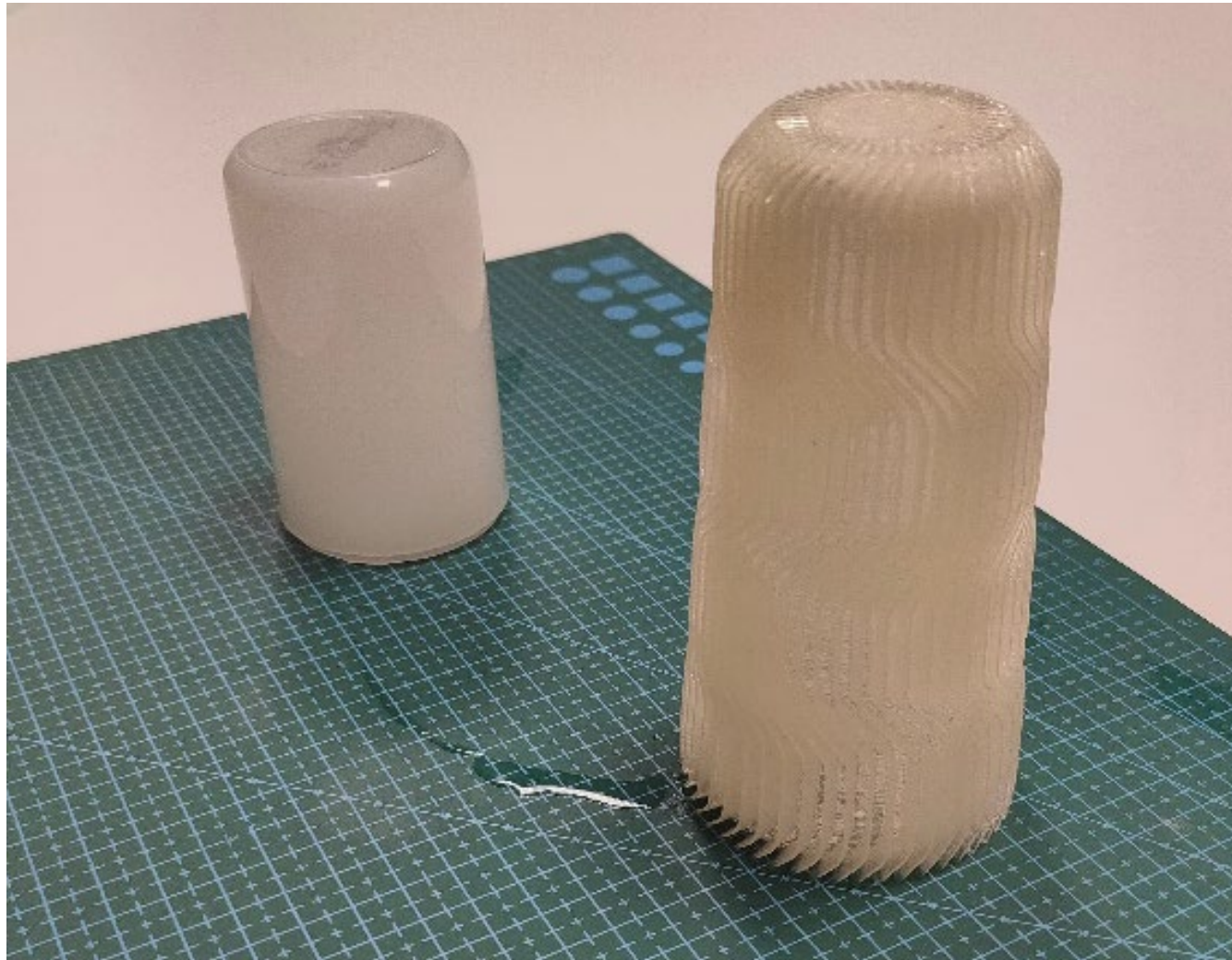
- The conditional shielding angle of LED lamps at least 90° means the prohibition of ceiling lamps in which LEDs not covered by the diffuser are visible.
- The overall brightness of LED lamps is not more than 5000 cd/m^2 – it's a condition that allows you to look at the lamp without visual discomfort. Such brightness corresponds to the brightness of the window opening visible from inside the room on a sunny day
- The condition of non-uniformity LEDs brightness $L_{\max} : L_{\min}$ smaller than 5:1 is the requirement to use a diffuser, behind which there are no unpleasantly bright LEDs.



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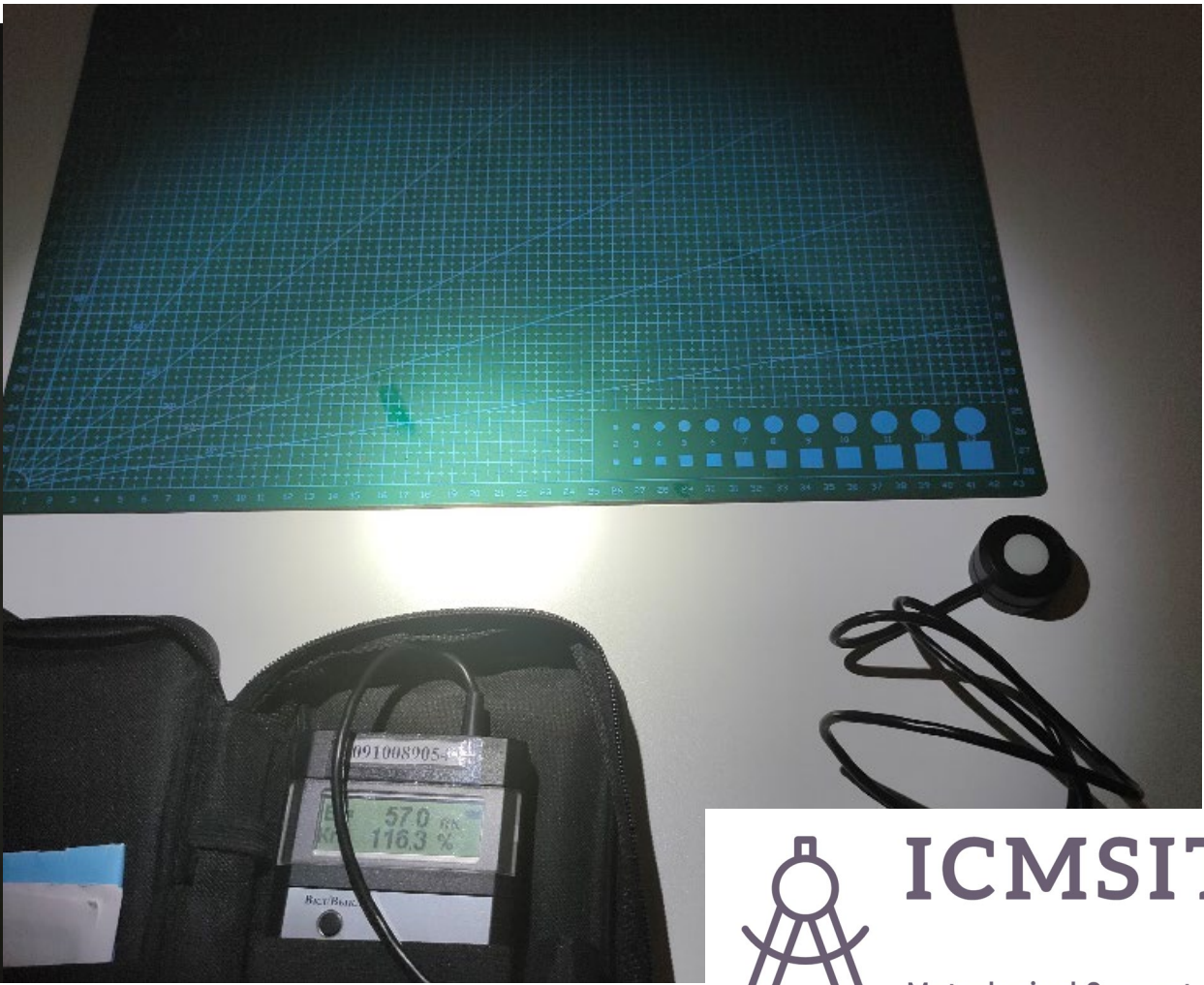
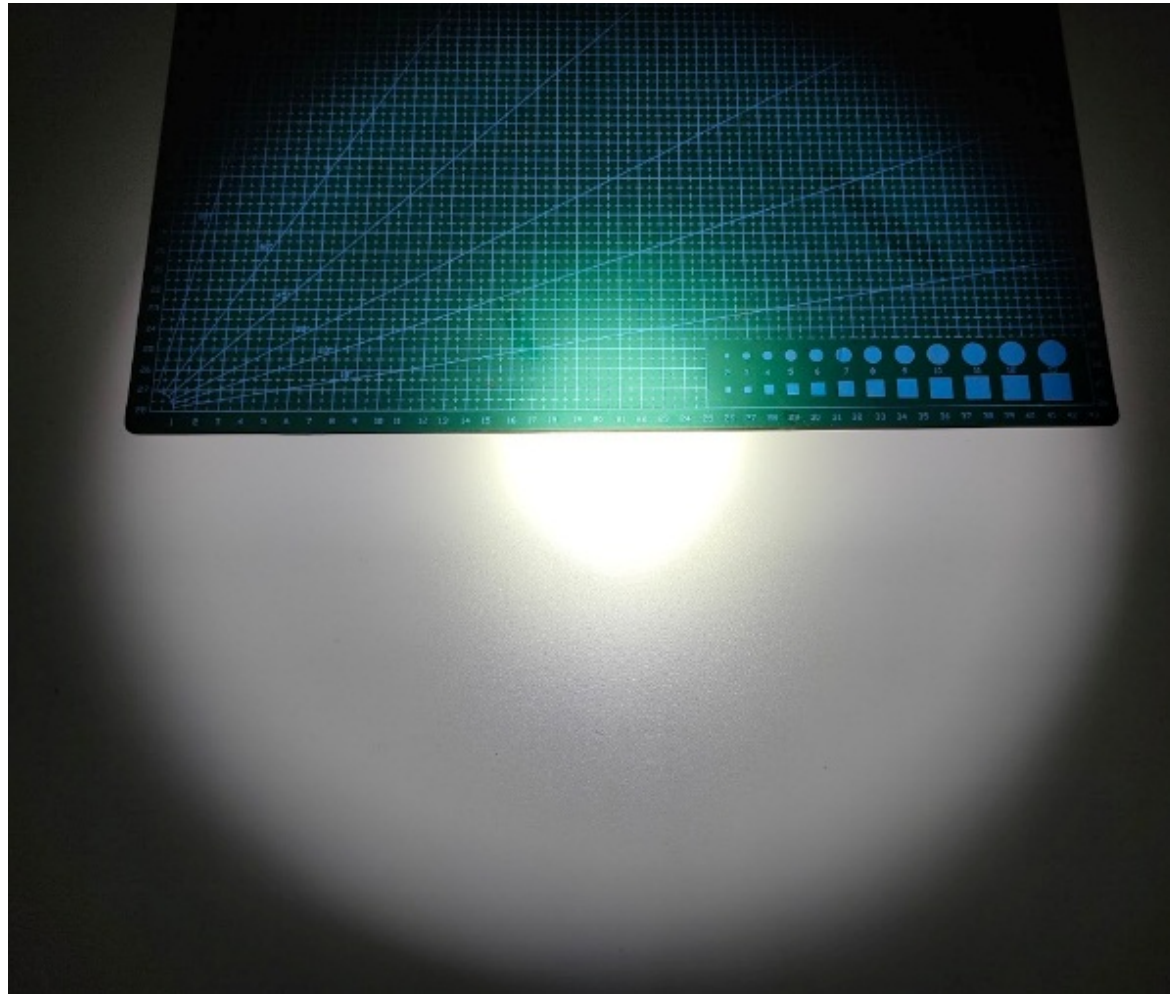
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The luminaire models developed by students during education

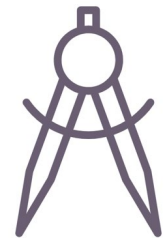


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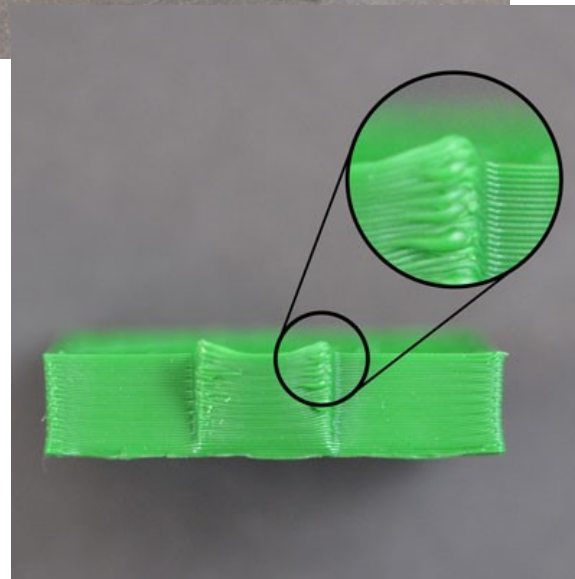
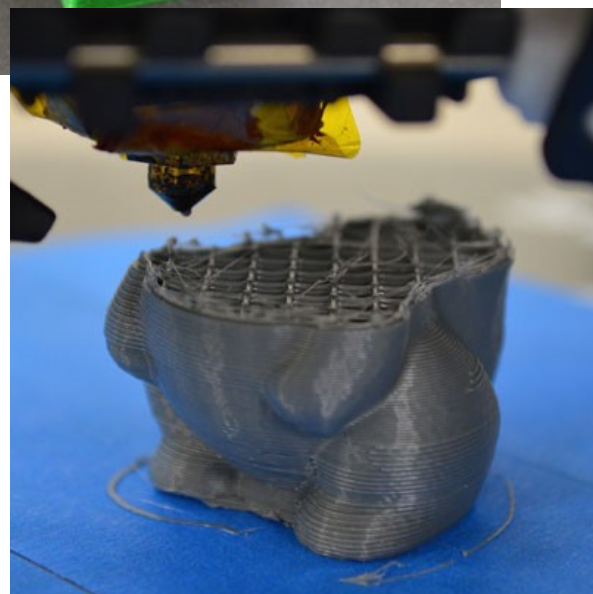
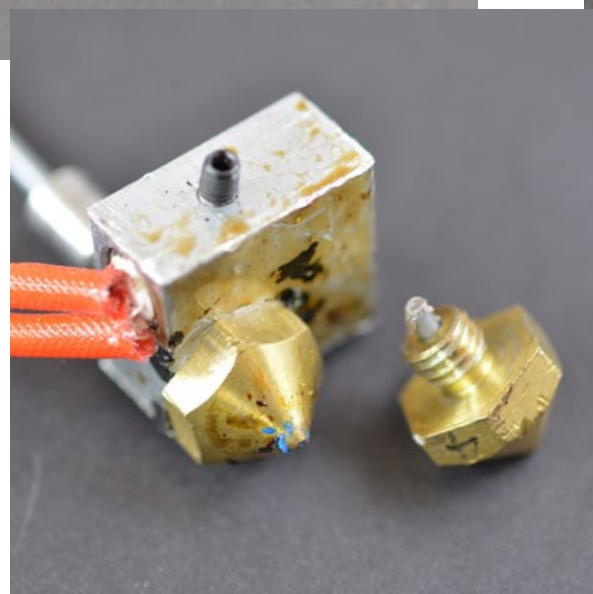
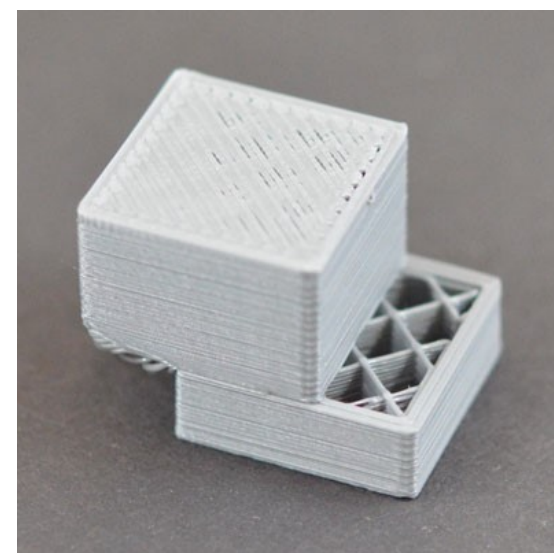
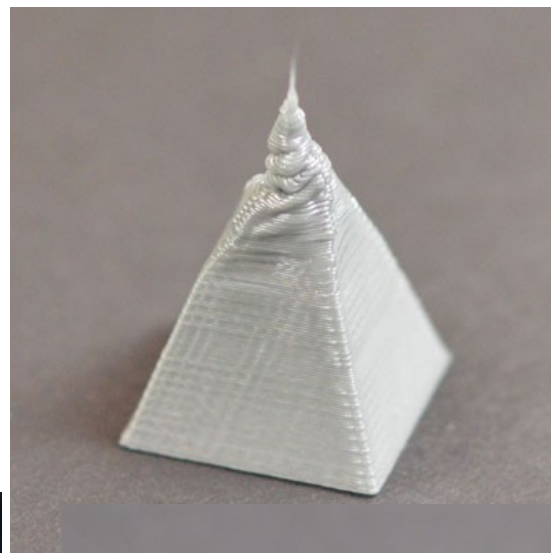
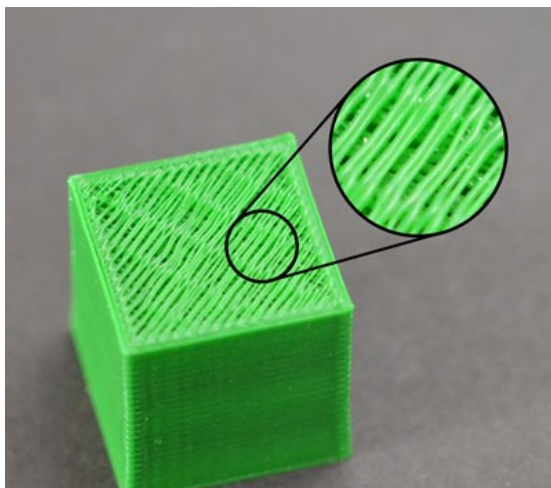
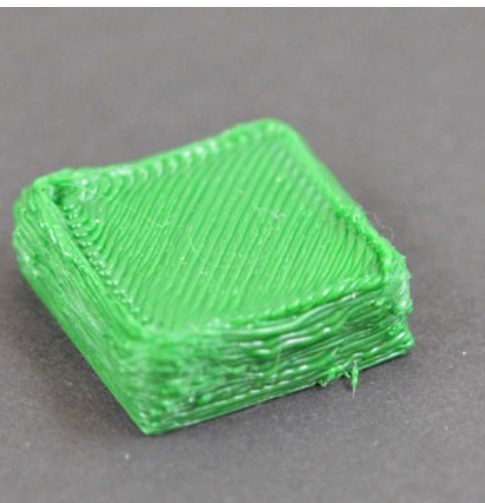
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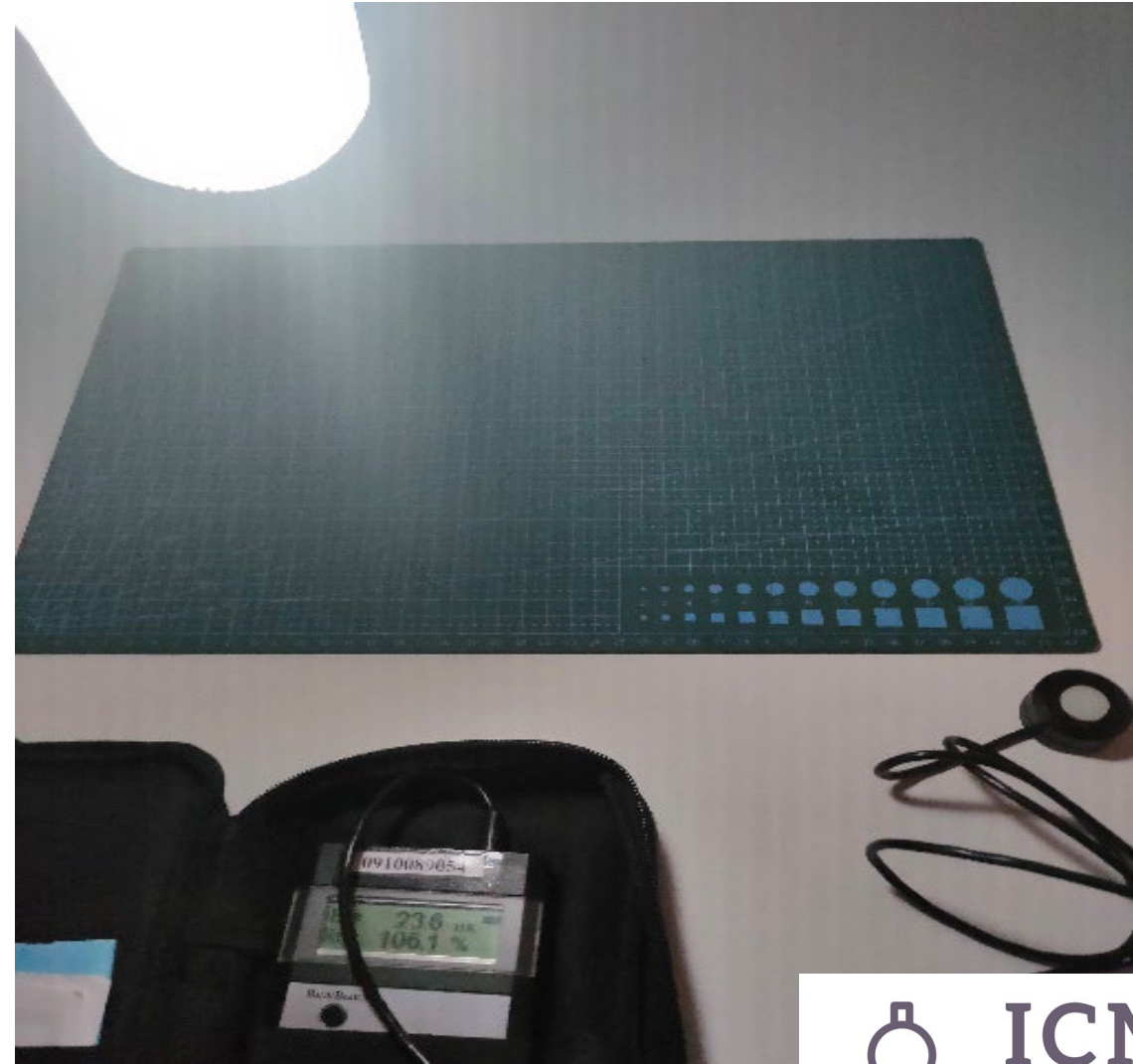
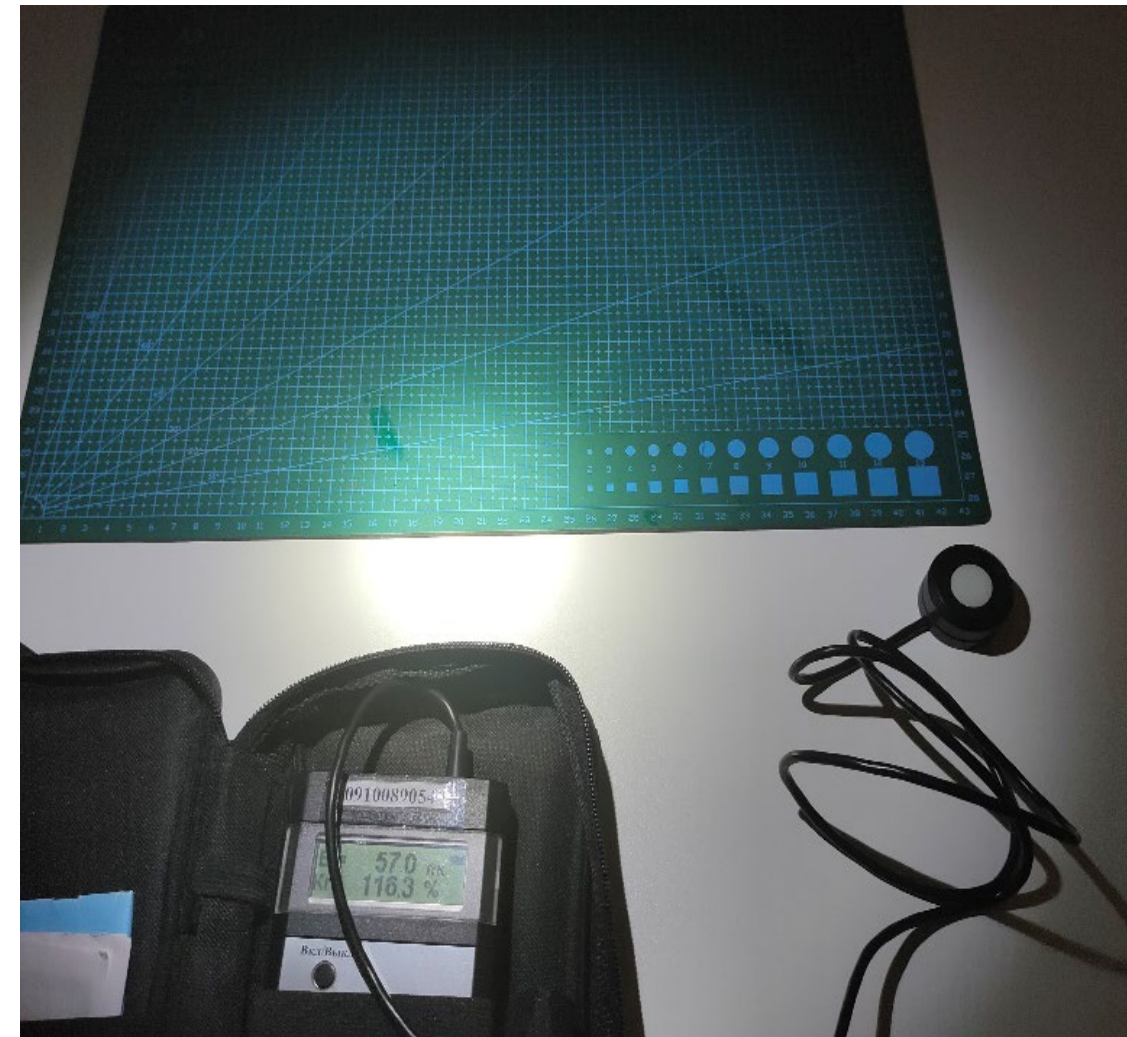
Problems with 3D printing



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Conclusion



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Conclusions

An example show of the 3D printing systems implementing in the educational process and the experimental modeling is presented in research works of students. The analysis of problems arising in the implementation of 3D printing systems was made and the assessment of the student's interest degree and motivation in operating with this technology were carried out. As a result, it was concluded that 3D printing can help create an improved learning environment for students, and takes into account different methodological styles of the educational process.

- translation of theoretical concepts and related numerical calculations into practice
- improving the effectiveness of training
- the need for consistent implementation throughout the entire training stage



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