Generation of terahertz radiation by excitation of plasmons in intercalated carbon compounds by femtosecond laser pulses

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Photonic crystal fibers (PCFs) with a hollow core was used as resonator for terahertz emitter based on metal intercalated graphene-like structures (GLS), placed on flat and cylindrical dielectric substrates. A setup was assembled to test the properties of THz emitters based on GLS, as well as to measure the bandwidth and Q-factor of resonators made on the basis of perforated hollow-core waveguides. The generation of terahertz radiation is assumed by the method of surface plasmon-polaritons excitation using a femtosecond titanium-sapphire laser [1]. The PCF geometry will be optimized by numerically solving Maxwell's equations using the FlexPDE program. To find the mode structure and dispersion relations in analytical form will be used the eikonal approximation, which makes it possible to take into account the Goos-Hanchen phase shift.

Acknowledgments
This work was supported by grant from President of the Russian Federation for state support of young Russian scientists—candidates of science (No. MK-927.2022.1.2)

[1] Zhao T, Gong S, Hu M Zhong R and etal 2015 *Scientific Reports* **5** 16059