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Unconventional high-voltage insulator in DC photoemission sources

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Especially when a high average current of 1 mA and more is required, it is important to protect photocathodes from overheating due to the absorbed laser power. Heat must be dissipated via the surrounding components and materials. This is largely limited by the low heat conductivity of usual high-voltage insulators, e.g. made of aluminum oxide. At the Johannes Gutenberg University in Mainz, we have successfully tested an insulating structure from boron nitride. Due to its physical properties, boron nitride fulfills both requirements: good heat conduction and high-voltage resistance. The results of high voltage tests and of the heat transfer capabilities will be presented.

Footnotes

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