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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 13842-2017

Replacing GB/T 13842-1992

Neodymium-doped Yttrium Aluminum Garnet laser rods

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Foreword

This standard is drafted in accordance with the rules given in GB/T 1.1-2009. This standard replaces GB/T 13842-1992 "Nd-doped yttrium aluminum garnet laser rod" and GB/T 14128-1993 "doped neodymium yttrium aluminum garnet Laser rod size series ". This standard compared with GB/T 13842-1992 and GB/T 14128-1993, in addition to editorial changes in the main skills The technical changes are as follows:

- modified the preferred combination of diameter and length dimensions (see Chapter 3, 3.3 of GB/T 14128-1993); - a combination of the preferred diameter and length dimensions of the imperial series (see Chapter 3); - modified the vertical and cylindrical roughness requirements of the end face in the laser rod processing requirements (see 4.1.3 and 4.1.5, 3.1.5 of GB/T 13842-1992); - Increased resistance to laser damage thresholds and measurement methods (see 4.2.4);
- modified the level of laser neodymium concentration requirements (see 4.4, GB/T 13842-1992 3.4); - modified the laser beam transmission wavefront distortion and extinction ratio grading requirements (see 4.5.2, GB/T 13842-1992 of 3.5.2 and 3.5.3); - Increased the one-way loss factor requirements and measurement methods (see 4.5.3 and 5.5.4); - Removed the laser performance requirements (see 3.6 of GB/T 13842-1992); - modified measurement of scattering particles (see 4.5.2, 3.5.1 of GB/T 13842-1992). This standard is owned by the Ministry of Industry and Information Technology (electronic) of the People's Republic of China. The drafting unit of this standard. China Electronics Technology Group Corporation 11 Institute. The main drafters of this standard. Zhu Jianhui, Qiu Ying. This standard replaced the previous version of the standard release.
- GB/T 13842-1992, GB/T 14128-1993. Doped neodymium yttrium aluminum garnet laser

rods

1 Scope

GB/T 13842-2017 is the Chinese national standard on neodymium-doped yttrium aluminum garnet laser rods, in the field of electronics. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 31 May 2017 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 December 2017. Classification: ICS 31.030, CCS L90. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the technical requirements, test methods and test methods for Nd:Y3Al5O12 (Nd:YAG) laser rods doped with neodymium-doped yttrium aluminum garnet Rules and delivery preparation. This standard applies to the neodymium-doped yttrium aluminum garnet laser rod.

2 Normative reference documents

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies to this article Pieces. For undated references, the latest edition (including all modifications) applies to this document. Surface defects of optical components GB/T 1185-2006

GB/T 2828.1-2012 Count Sampling Inspection Procedures Part 1. Batch Inspection Sampling Plan by Reception Quality Limit Measurement of wavefront distortion of laser rods

GB/T 11297.1-2017 Measurement of extinction ratio of neodymium - doped yttrium aluminum garnet laser rod

GB/T 11297.3-2002 Test method for laser surface damage of optical surface GB/T 16601-1996

GB/T 27661-2011 laser rod single pass loss coefficient measurement method Test methods and procedures for the certification of micro - circuit production lines General specification for laser optics components GJB1525-1992 General Principles of Inductively Coupled Plasma Atomic Emission Spectrometry JY/T 015-1996 Optical components - Antireflective coatings

3 Size series

The combination of the preferred diameter and the length dimension shall conform to the blackened part of Table 1, and the diameter and length tolerances of the laser rod shall be in accordance with the diameter $-0.05\text{mm} \sim 0.00\text{mm}$; length $-0.5\text{mm} \sim 0.5\text{mm}$. The preferred combination of diameter and length dimensions (English series) is shown in Table 2. Table

1 The preferred combination of diameter and length dimensions (metric series) is in millimeters diameter length 10 20 30 40 50 55 60 70 80 90 100 110 120 140 150 160 180 190 2.0 3.0 4.0 5.0 6.0 7.0 8.0