

1. Reasonable combination of surface coatings with substrate materials under different service conditions

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Source: *Mocaxue Xuebao/Tribology*, v 13, n 4, p 289-296, Oct 1993; **Language:** Chinese; **ISSN:** 10040595

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Abstract: The behaviours of Ni-P and TiN coatings under fretting fatigue and sliding wear conditions were investigated and the relations of Ni-P and TiN coatings to the substrate materials were discussed. The Ni-P coatings increase the fretting fatigue strengths of low strength steel 2Cr13 and middle strength steel 35CrMo, and decrease the fretting fatigue strength of high strength steel 60Si2Mn. By Ni-P coating, the fretting fatigue limit of 2Cr13 is increased from 289MPa to 363MPa, and the limit of 35CrMo is increased from 294MPa to 359MPa. While the TiN coatings decrease the fretting fatigue strength of 35CrMo and 60Si2Mn due to the obvious difference in hardness between the surface coatings and the substrate materials. Hence the effect of surface coatings varies not only with the service condition, but also with the characteristics of substrate materials. (12 refs)

Main heading: Inorganic coatings

Controlled terms: Fatigue of materials

Uncontrolled terms: Fretting fatigue - Nickel-phosphorus coating - Titanium nitride coating

Classification Code: 813.2 Coating Materials - 931.1 Mechanics - 943.2 Mechanical Variables Measurements

Treatment: Experimental (EXP)

Database: Compendex

Data Provider: Engineering Village

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2. High power CW mode-locked frequency-doubled Nd:YAG laser pump source

Bai, Jintao (1); Wang, Nuo (1); Zhang, Yibin (1); Wang, Shuicai (1)

Source: *Chinese Journal of Lasers B (English Edition)*, v B2, n 3, p 193-197, Jun 20 1993; **ISSN:** 10042822

Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China

Abstract: The resonator design and dynamic performance of a CW actively mode-locked frequency-doubled Nd:YAG laser pump source with a single-lens telescopic resonator were studied. The 16W CW mode-locking out-put power and 1.6W CW mode-locking frequency-doubled green light output were obtained with 200 MHz repetition rate and 3.5 kW single pump lamp. The CW mode-locked second harmonic pulses train is very clean and stable and its peak has no bright burr. (5 refs)

Main heading: Solid state lasers

Controlled terms: High power lasers - Laser mode locking - Laser resonators - Optical pumping

Uncontrolled terms: CW mode locking - Frequency doubling - Pumping source

Classification Code: 744.4 Solid State Lasers

Treatment: Applications (APP) - Experimental (EXP)

Database: Compendex

Data Provider: Engineering Village

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3. Pressure response of configuration entropy and information dimension in amorphous iron

Qu, Shixian (1); Shen, Zhongyi (1)

Source: *Wuli Xuebao/Acta Physica Sinica*, v 42, n 7, p 1112-1116, Jul 1993; **Language:** Chinese; **ISSN:** 10003290

Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China

Abstract: The pressure response of configuration entropy and information dimension of atomic energy distribution in amorphous iron was analysed. The author calculated the particle number distribution of atomic energy, and took the information entropy of it as the configuration entropy of the amorphous structure. The calculated results suggest that the atomic energy distribution curve and the configuration entropy are related to the energy interval in statistics. The configuration entropy is determined by the average value of it in no scaling distribution range of atomic energy between lower bound and upper bound. The results of simulation indicate that information dimension is another efficient parameter to describe the degree of disorder in amorphous system, and the effects of pressure on fractal dimension and the degree of structural disorder in amorphous structure show complicated behavior. (9 refs)

Main heading: Iron

Controlled terms: Amorphous materials - Entropy - Pressure

Uncontrolled terms: Amorphous iron - Configuration entropy - Information dimension - Pressure response

Classification Code: 545.1 Iron

Treatment: Theoretical (THR)

Database: Compendex

Data Provider: Engineering Village

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4. CW mode-locked frequency doubling Nd:YAG fs laser pump source with single lens telescopic resonator

Bai, Jintao (1); Wang, Nuo (1); Zhang, Yibin (1); Wang, Shuicai (1)

Source: *Jiguang Jishu/Laser Technology*, v 17, n 3, p 179-184, Jun 25 1993; **Language:** Chinese; **ISSN:** 10013806

Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China

Abstract: A higher green light output from a CW mode-locked frequency doubled Nd: YAG laser was achieved by adopting a single lens telescopic cavity. Under the excitation of a 3.5KW single lamp, a green light output of 1.7W at a repetition rate of 200MHz was experimentally obtained with a KTP crystal inside the cavity. The amplitude stability of the output pulse is less than 3%. (6 refs)

Main heading: Laser resonators

Controlled terms: High power lasers - Laser mode locking - Laser optics - Optically pumped lasers

Uncontrolled terms: Laser pump sources - Telescopic resonators

Classification Code: 744.1 Lasers, General - 744.7 Laser Components

Treatment: Applications (APP) - Theoretical (THR) - Experimental (EXP)

Database: Compendex

Data Provider: Engineering Village

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5. Development of on-line measurement system for grinding machining

Wang, Xiwen (1); Chen, Da X. (1)

Source: *Proceedings of SPIE - The International Society for Optical Engineering*, v 2101, p 358-362, September 22, 1993, *Measurement Technology and Intelligent Instruments*; **ISSN:** 0277786X, **E-ISSN:** 1996756X; **ISBN-13:** 9780819413840; **DOI:** 10.1117/12.156463; **Conference:** Measurement Technology and Intelligent Instruments 1993, October 29, 1993 - November 5, 1993; **Publisher:** SPIE

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Abstract: In this paper a new type of intelligent on-line measurer is developed which is used for on-line measuring diametershape and place value of the axle. In the meter MCS-51"1 microcontroller is adopted. The sensor is an inductance transducer. The dynamic character of the sensor is analyzed in detail. That is say how the poor dynamic character of the meter make the on-line measuring error If the meter is a first-order system and the input function is a ramp function the respond error of the system to the input is analyzed. With this method the system error is compensated by the software. So the accuracy of the measuring result is high enough. In order to keep the measuring system work at worksite in normal condition the anti-interference techniques are adopted. In addition to hardware anti-interference technique is used the redundant programming technique and watchdog system are used too in the software. lastly the real measuring result is given. © COPYRIGHT SPIE. Downloading of the abstract is permitted for personal use only. (3 refs)

Main heading: Errors

Controlled terms: Grinding (machining)

Uncontrolled terms: Anti-interference technique - Dynamic character - First order systems - Measuring systems - Normal condition - On line measurement system - Online measuring - Redundant programming

Classification Code: 604.2 Machining Operations

Database: Compendex

Data Provider: Engineering Village

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