

**Special Issue**

## Ultraprecision Processing and Measuring Technology to Support Next-Generation Astronomy Observation

**Review**

■ **Next-Generation Thirty Meter Telescope (TMT)**

Tomonori USUDA, Shin OYA, Masahiro SUGIMOTO,  
Yutaka HAYANO and Shinobu OZAKI .....291

**Lecture**

■ **Fabrication and Metrology Technology for TMT Primary Mirror Segments**

Akira MIYAKE .....296

■ **Forefront of Development of Ultraprecise X-ray Mirrors for Synchrotron Radiation X-rays**

Satoshi MATSUYAMA and Kazuto YAMAUCHI .....300

■ **Technology for Hard X-ray Telescopes to Observe Cosmic X-rays**

Hironori MATSUMOTO .....305

■ **Development of an Image Slicer Unit for Mid-Infrared Spectrometer Based on Ultra-Precision Machining Technology**

Okiharu KIRINO and Itsuki SAKON .....309

■ **Fabrication and Measurement Techniques of Immersion Grating**

Yuji IKEDA and Naoto KOBAYASHI .....313

■ **My Experience in Precision Engineering**

Koichi KITAJIMA .....327

■ **Gravure & Interview**

National Institutes of Natural Sciences, National Astronomical Observatory of Japan, Advanced Technology Center .....287  
Mitsuhiro FUKUSHIMA/Kenji MITSUI  
Interview : Shigekazu HANAWA

■ **Introduction to Precision Engineering**

Fabrication of Thin Solid Coating and Tribology with Plasma and Ion Beam Process/Hiroyuki KOUSAKA and Noritsugu UMEHARA .....319

■ **Introduction of Laboratories**

System Integration Laboratory Graduate School of Natural Science and Technology, Okayama University .....325

- JSPE Affiliate News ..... 328
- JSPE Report ..... 331
- International Conference Report ..... 333
- From the Lecture Committee .....告 4-1
- Editor's Note .....告 4-10

## Paper

- **Image Recognition by Using Generalized Learning Vector Quantization** ————— 335  
Atsushi SATO
- **Three-Dimensional Measurement Using Multiple Slits with a Random Dot Pattern** ————— 341  
—Identification Method of Multiple Slits—  
Kumiko YOSHIDA and Kikuhito KAWASUE
- **A Realization of Servo Type Jerk Sensor and Its Application to Air Type Anti-Vibration Apparatus** ————— 348  
Masayuki KUBOTA and Shinji WAKUI
- **Firearm Classification based on Extensive Jaccard Index of 3D Cross-sectioned Shape of Firing Pin Impression on Fired Cartridge Cases** ————— 355  
Tsutomu NITOBÉ, Takuya YASUNO and Shun'ichi KANEKO
- **Kansei Evaluation for Japanese Sword's Beauty** ————— 361  
Michio UNEDA, Norihiro MURAKAMI, Shinji TAKASHIMA, Hideo JINGU and Ken-ichi ISHIKAWA
- **A Basic Study on Predicting In-Process Energy Consumption in Machining Based on Specific Energy Consumption** — 367  
Tetsuo SAMUKAWA and Haruhiko SUWA
- **Laser Cutting Out Process for Semiconductor Crystal Material Applying Laser Slicing Method** ————— 375  
Yohei YAMADA, Yohei KANEKO, Riku AOKI, Junichi IKENO and Hideki SUZUKI
- **Dynamic Observation of Internal Stress and Crack Formation Process by Indentation on the Glass** ————— 381  
—Two Dimensional Observation with Wedge Shaped Indenter—  
Hirofumi HIDAL, Ryouhei HASEGAWA, Yuta HORIE, Akira CHIBA, Souta MATSUSAKA, Takashi ONUMA and Noboru MORITA

※The journal papers listed above are published on J-STAGE (Japan Science and Technology Information Aggregator, Electronic).

<https://www.jstage.jst.go.jp/browse/jjspe/-char/en/>

This printed material does not include these papers.