



Final Call for Papers



IDW '13 - The 20th International Display Workshops

December 4-6, 2013

Sapporo Convention Center, Sapporo, Japan

Sponsored by

The Institute of Image Information and Television Engineers

The Society for Information Display

<http://www.idw.ne.jp/>



IDW '13 FEATURES

IDW '13 will integrate fifteen workshops in specialized fields playing important roles in information display activities. Each workshop will consist of oral presentations by invited/contributed speakers and poster presentations. Detailed and fruitful discussions on each specialized R&D update will be provided. Three topics, oxide TFT, augmented reality and virtual reality, and lighting technologies are specially highlighted this year. The workshops should be of interest not only to researchers and engineers, but also to those who manage companies and institutions in the display community.

CONFERENCE SITE

Sapporo is located in Hokkaido, a large island in the north of Japan. With a large population of more than 1.9 million, Sapporo is the cultural and economic center of Hokkaido, but is also blessed with abundant nature. Close to Sapporo, there are ski resorts and other popular tourist spots including hot springs. Dishes made using local Hokkaido produce and seafood also rank among the charms of Sapporo. Visitors can enjoy delicious food that includes fresh seafood, a wide range of fruit, and fancy confectionery.

Access:

The **Sapporo Convention Center** is conveniently situated close to Higashi-Sapporo subway station. Higashi-Sapporo subway station is 6 minutes by Tozai Line from Odori subway station in downtown Sapporo.

There are many flights (domestic and international) to **Sapporo (New Chitose)** airport, which is connected to the downtown area by the JR Airport Express (40 minutes) and airport shuttle buses (70 minutes). An extensive and well-developed public transport system is available in Sapporo, making traveling around the city and the surrounding areas fun and easy.

Please see the following websites for more information.

Sapporo Convention Center: <http://www.sora-scc.jp/eng/index.html>

Sapporo City: <http://www.welcome.city.sapporo.jp/english/>

DEADLINES AND KEY DATES

Submission of Technical Summary ----- June 28, 2013

Acceptance Notification/Author's Kit available on the website

----- July 19, 2013

Submission of Camera-Ready Manuscript & Abstract

----- September 5, 2013

Submission of Late-News Paper ----- September 27, 2013

Early Bird Registration Discount ----- November 1, 2013

LANGUAGE

The official language is English.

The latest information is available on <http://www.idw.ne.jp/>

Keynote Addresses

- *The Future of Mobile Displays*
Yoneharu Takubo (Japan Display)
- *Recent Development of Metamaterials:
Novel Optical Application of Artificially Structured
Materials with Extraordinary Optical Constant*
Masanori Hangyo (Osaka Univ.)

In addition, another Keynote Address will be presented by LG Display.
Please see our website for the detailed information.

The titles are tentative.

Special Topics of Interest

- *Oxide TFT*
- *Augmented Reality and Virtual Reality*
- *Lighting Technologies*

Paper submissions are eagerly recommended to these special topics.

EXHIBITION

The IDW '13 Exhibition covers materials, components, manufacturing and measuring equipment, software systems and other related products for display devices.

To make an exhibition, please contact the IDW '13 Secretariat.

IDW '13 CHAIRS

General Chair

Yasufumi Iimura (Tokyo Univ. of A&T)
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Executive Chair

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Program Chair

Ken Ishikawa (Tokyo Inst. of Tech.)
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The Advance Program will be available in September 2013, including REGISTRATION and HOTEL INFORMATION.

SPECIAL TOPICS OF INTEREST

Oxide TFT

*Organizer Workshops: AMD, FMC, OLED and FLX
Facilitator: Mutsumi Kimura (Ryukoku Univ.)*

Recently, research on amorphous oxide semiconductors such as In-Ga-Zn-O (a-IGZO) and similar materials has been carried out worldwide. Research on other materials and polycrystalline oxide semiconductor TFTs has also been activated. Last year, a-IGZO TFTs were mass produced for use in AM-LCDs, and several companies are also ready to use them in AM-OLEDs. This special topic will cover all aspects of oxide-semiconductor-TFT-related science and technologies.

Scopes

- 1) Oxide semiconductor materials and fundamental mechanisms
- 2) Device physics, fabrication processes and equipments
- 3) Oxide-TFT display circuits and embedded systems
- 4) Issues: illumination instability, degradation, etc.
- 5) Oxide-TFT backplane for LCD, OLED display, e-Paper
- 6) Flexible devices, transparent electronics and other applications

Augmented Reality and Virtual Reality

*Organizer Workshops: 3D, VHF, PRJ, DES and INP
Facilitator: Haruhiko Okumura (Toshiba)*

This topic will cover all aspects of technologies, systems, applications and human factors for information display using a fusion of real and virtual. Demonstration sessions will be held to give impressive AR and VR experiences to all participants.

Scopes

- 1) Augmented reality (AR), mixed reality (MR) and virtual reality (VR) technologies
- 2) Projection mapping technology on real objects
- 3) Displays for AR, MR and VR (Video and Optical See-through type displays including HMD and HUD)
- 4) Input and interactive technologies for AR, MR and VR
- 5) Image processing for AR, MR and VR

Lighting Technologies

*Organizer Workshops: FMC, PH and OLED
Facilitator: Yasunori Kijima (Sony)*

This topic will cover all aspects of science and technologies of lightings, ranging from LED lighting, OLED lighting, flexible lighting, manufacturing of lightings, materials and device structures for lightings and internal or external efficiency enhancement technologies.

Scopes

- 1) Solid-state lighting: LED and OLED
- 2) Fluorescent light sources: CCFL and HCFL
- 3) Flexible lighting including backlight unit for LCD
- 4) Manufacturing of lightings and their applications
- 5) Materials and device structures for lightings
- 6) Technologies about the internal or external efficiency enhancement
- 7) Theories, simulations and measurements for lightings
- 8) Energy consumption and environmental issues
- 9) Miscellaneous topics related with lightings

WORKSHOP OUTLINES

LCT

LC Science and Technologies

Workshop Chair: Hiroyuki Okada (Univ. of Toyama)

This workshop will cover all aspects of liquid crystal (LC) science and technologies, ranging from fundamental material research to display and other applications. An in-depth discussion on advanced LC displays and novel functionalities of LC materials will be especially emphasized.

Topic Areas

- 1) Physicochemical studies of LC materials
- 2) Nano-structural LC alignment and devices including blue phase
- 3) Surface alignment processes and characterization techniques
- 4) Electro-optic effects, display modes, optical design and simulations including 3D technologies
- 5) Fabricating, manufacturing, measuring and evaluation techniques
- 6) High performance displays featuring excellent image quality
- 7) Transparent LC displays
- 8) LC technologies for flexible displays and electronic papers
- 9) Optical functional devices for non-display applications
- 10) LC semiconductors and organic electronics
- 11) LC photonic crystals and lasers

FMC

FPD Manufacturing, Materials and Components

Workshop Chair: Tetsuya Miyashita (Tohoku Inst. of Tech.)

This workshop will cover technology trends and flat panel displays (FPDs) from the perspective of manufacturing, materials, components and systems.

Topic Areas

- 1) Trends in FPD materials, components and systems
- 2) Technical trends in panel construction
- 3) Optical materials and systems
- 4) Color filter materials
- 5) Lighting materials, components and systems
- 6) Equipment and materials for production
- 7) Measurement and evaluation equipment
- 8) Environmental technologies in FPDs

AMD

Active Matrix Displays

Workshop Chair: Yoshihide Fujisaki (NHK)

This workshop will cover all aspects of active matrix displays.

Topic Areas

- 1) Active-matrix displays:
LCDs, OLEDs, e-papers, FEDs, micro-displays, flexible active-matrix displays
- 2) Fundamentals, structures, processes, new materials
- 3) Array & circuit design technologies, addressing schemes, systems
- 4) Evaluation methods, reliability, mechanical testing
- 5) Active devices:
oxide TFTs, organic TFTs, silicon-related TFTs, CNT, graphene-based devices and other active devices, devices with solution process
- 6) Touch & other sensors
- 7) Digital signage and other novel applications

PDP

Plasma Displays

Workshop Chair: Hiroshi Kajiyama (Tokushima Bunri Univ.)

This workshop will cover all aspects of science, technologies and applications of plasma display panels.

Topic Areas

- 1) Fundamental mechanisms
- 2) Panel configurations
- 3) Materials, components and fabrication processes
- 4) Driving techniques, signal processing and image quality
For high efficacy, high γ , high exo-emission, high speed driving, high definition over 4k x 2k, high performance, etc.
- 5) Application for PDPs

PH**EL Displays and Phosphors***Workshop Chair: Yoichiro Nakanishi (Shizuoka Univ.)*

This workshop will include a discussion on current topics in EL displays (ELDs), LEDs and phosphors, and will also deal with phosphor application, phosphor screens for CRTs, plasma displays (PDPs), field emission displays (FEDs), lighting source and other emissive devices.

Topic Areas

- 1) Inorganic ELDs (materials, process, devices, drive circuits, etc.)
- 2) LEDs (materials, devices, panels, lighting, etc.)
- 3) Phosphors (for CRTs, PDPs, FEDs, VFDs, LEDs, etc.)

3D**3D/Hyper-Realistic Displays and Systems***Workshop Chair: Sumio Yano (Shimane Univ.)*

This workshop will cover several current topics encompassing 3D/hyper-realistic displays, systems and other related technologies.

Topic Areas

- 1) Stereoscopic, autostereoscopic, holographic and other 3D display technologies and systems
- 2) Immersive, interactive and VR display technologies and systems
- 3) 3D/hyper-realistic display technologies and systems for Augmented Reality (AR)
- 4) Digital archive systems using 3D/hyper-realistic displays
- 5) New applications using 3D/hyper-realistic displays
- 6) 3D image coding, 2D to 3D conversion, multi-viewpoint representation and other 3D/hyper-realistic image processing
- 7) Human factor and evaluation of 3D/hyper-realistic display techniques and systems
- 8) New devices for 3D/hyper-realistic display techniques and systems

FED**Field Emission Display and CRT***Workshop Chair: Hidenori Mimura (Shizuoka Univ.)*

The following topics will be covered in this workshop.

Topic Areas

- 1) Fundamental mechanisms and configurations
- 2) Modeling and simulation
- 3) Materials, components and fabrication processes
- 4) Field emission physics and characteristics
- 5) Driving technologies and signal processing
- 6) Picture quality, reliability and lifetime
- 7) Applications
- 8) Miscellaneous topics related with field emitters
- 9) Entire field of CRT

VHF**Applied Vision and Human Factors***Workshop Chair: Taiichiro Kurita (NHK)*

This workshop will cover all aspects of vision and human factors related to information displays, such as image quality, display characteristics and visual requirements, image format, display measurements, display applications, or ergonomics.

Topic Areas

- 1) Image-quality base: analytic models, evaluation methods and metrics
- 2) Visual requirements for display characteristics: luminance, contrast, gray-scale, color, resolution, frame rate, viewing angle, etc.
- 3) Display image format for better visual experience
- 4) Analysis and improvement of display image-quality deterioration, such as dynamic range or spatio-temporal image artifacts
- 5) Display measurement methods relevant to human factors
- 6) New applications of displays, such as virtual/augmented reality systems
- 7) Display ergonomics, such as legibility/usability for electronic papers, or actions/behaviors related to visually displayed information

OLED**OLED Displays and Related Technologies***Workshop Chair: Takeo Wakimoto (Merck)*

This workshop will cover all aspects of science and technologies of OLED, ranging from materials research and basic device physics to display including backplane technologies and other applications.

Topic Areas

- 1) Materials for organic devices (OLED, OTFT, OLET)
- 2) Device physics and related phenomena of organic devices
- 3) Backplane technologies for OLED applications
- 4) Fabrication processes for organic devices
- 5) Miscellaneous topics related with organic devices
- 6) Fundamental mechanisms and configurations of organic devices
- 7) OTFT for OLED displays
- 8) Organic light-emitting transistors (OLET)
- 9) OLED for lightings
- 10) Flexible organic devices

PRJ**Projection and Large-Area Displays and Their Components***Workshop Chair: Hideyuki Kanayama (Panasonic)*

This workshop will cover current topics concerning projection and large-area displays and their components.

Topic Areas

- 1) Projectors, pico-projectors, embedded projectors, near-eye displays, head-up displays and projection TVs
- 2) Micro display and MEMS technologies for projection
- 3) Optics and optical components (light sources, screens, lenses, mirrors, films, etc.) for projection
- 4) Algorithm and image processing for projection and large-area displays
- 5) Digital cinema, 3-D projection, signage and vehicle display systems
- 6) Large-area display systems and tiled-display systems

All poster presenters in PRJ are required to give a brief, 3-minute oral presentation with no discussion time.

EP**Electronic Paper**

Workshop Chair: Hiroshi Arisawa (Fuji Xerox)

This workshop will cover all aspects of electronic paper ranging from materials science and devices to human factors and various applications for the future.

Topic Areas

- 1) Advancement of various display technologies for e-Paper to enhance colors, brightness and contrast ratio
- 2) Novel functional materials and components
- 3) Driving method
- 4) Human interfaces suitable for e-Paper from paper-like displays to tablet PCs and so on
- 5) Various applications of e-Paper such as e-Books and e-Newspapers
- 6) Discussion of the social impact of e-Paper
- 7) Evaluation method taking account of human factors

All poster presenters in EP are required to give a brief, 3-minute oral presentation with no discussion time.

MEET**MEMS and Emerging Technologies for Future Displays and Devices**

Workshop Chair: Masayuki Nakamoto (Shizuoka Univ.)

This workshop will cover all aspects of science and technologies of MEMS, nanotechnologies and emerging technologies for future displays, imaging devices, and related electron devices, ranging from materials research and basic device physics to display and other applications.

Topic Areas

- 1) Displays, imaging devices and other optical and electron devices using MEMS, nanotechnologies and emerging technologies
- 2) Optical MEMS such as optical scanners, optical switches, optical mirrors, optical space modulators, optical filters, etc.
- 3) Sensors and actuators for electromagnetic wave, infrared rays, ultraviolet rays, X-rays, visible rays, supersonic wave, hearing, touch, smell, taste, etc.
- 4) Materials, components and fabrication processes
- 5) Fundamental mechanisms and configurations
- 6) Miscellaneous topics related to future displays

DES**Display Electronic Systems**

Workshop Chair: Haruhiko Okumura (Toshiba)

This workshop will cover all aspects of electronic systems including hardware as well as software on all kinds of displays.

Topic Areas

- 1) Driving methods, circuits and systems for AMOLEDs and LCDs
- 2) Video processing including deinterlace, scaling and elimination of artifacts and blur
- 3) High quality color reproduction including high dynamic range and wide color gamut
- 4) High-fidelity systems such as professional use and master monitors
- 5) Exploration of future standards such as post-HDTV
- 6) Video interface technologies including data transmission and storage
- 7) Novel display systems including mobile/auto applications
- 8) Cooperative operations of functional components
- 9) Circuit technologies including high speed and low power driving

All poster presenters in DES are required to give a brief, 3-minute oral presentation with no discussion time.

FLX**Flexible Displays**

Workshop Chair: Hideo Fujikake (Tohoku Univ.)

This workshop will cover all aspects of flexible electronics, including material science, device technology, fabrication processes, and application systems for next-generation information and energy technology.

Topic Areas

- 1) Novel flexible devices in display and non-display fields
- 2) Flexible/stretchable mechanism and strategy
- 3) Fabrication methods, including printing techniques, soft lithography, roll-to-roll process and transfer techniques for high precision, large area and high productivity
- 4) Flexible substrate innovation (plastic film, metal foil, ultra-thin glass sheet, textile, paper, etc.) and encapsulation
- 5) Excellent transistors in flexible organic/inorganic electronics
- 6) High-performance display principles (OLED, LC, electronic paper, etc.)
- 7) Tolerance evaluation for bending and stretching deformation
- 8) Revolutionary device applications (paper-like, bendable, foldable, roll-up screen, hanging, wearable, wrapping usages, etc.)

INP**Touch Panels and Input Technologies**

Workshop Chair: Kenji Nakatani (Touchpanel Labs.)

Touch panel technology continues to evolve. Camera systems are often employed in auto-stereoscopic displays. Sensing and displaying 3D positions in space literally open a new dimension for a truly intuitive human interface. This workshop covers all aspects of input technologies related to displays, ranging from materials, devices, application systems to discussions on how we interact with various systems.

Topic Areas

- 1) Out-cell, On-cell and In-cell touch panels
- 2) Touch panel materials, devices, production processes and systems
- 3) Image sensors
- 4) 2D, 3D imaging devices and systems
- 5) Adaptive and personalized interfaces
- 6) Input systems for augmented reality
- 7) Human-computer interaction and other emerging interactive technologies

Short Presentation for Poster Presenters

“Short Presentation Session” for poster presenters to be introduced as part of PRJ, EP and DES workshops!

PAPER SUBMISSION

INSTRUCTIONS FOR SUBMISSION OF TECHNICAL SUMMARY

Submit a Technical Summary in PDF format without any protection via the conference website:

<http://www.idw.ne.jp/authinfo.html>

Follow the submission instructions given on the website and shown below. The Technical Summary will be used only for evaluation and will not be published. The title of the accepted papers, the authors and their affiliations will be published in the Advance Program.

I. Technical Summary Guidelines

The file should be formatted to A4 page size. Details of the format are described in the sample file available on the website (<http://www.idw.ne.jp/authinfo.html>).

The file should contain one or two pages of text in **one column**, with additional pages for figures/tables/photographs. The following items should be included:

- (1) **Paper title**
- (2) **Names of all authors with their affiliations:** The name of the presenting author should be underlined.
- (3) **Abstract:** 50 words or less, highlighting the focus of your paper.
- (4) **Presentation style:** Indicate if you wish to have your paper considered for oral or poster presentation.
- (5) **Preference of Workshop/Special Topics of Interest:** Indicate the closest matching Workshop/Special Topics of Interest.
- (6) **The body** of the Technical Summary must contain the following.
 - (a) **Background and objectives:** Introduce the state of the subject and describe the goal of your work.
 - (b) **Results:** Describe specific results. Illustrations to highlight your work are encouraged.
 - (c) **Originality:** Clearly describe what are new and/or emphasized points.
 - (d) **Impact:** Discuss the significance of your work and compare your findings with previously published works.
 - (e) **References:** List references covering projects in related areas.
 - (f) **Prior publications:** The paper must be an original contribution. If you have published or presented material for similar work, explain how the present material differs.

II. Online Submission

Access <http://www.idw.ne.jp/authinfo.html>

The submission procedure consists of three steps:

- (1) **Questions to authors:** Select the number of authors, affiliations and maximum number of affiliations for one author.
- (2) **Paper title & author information:** Enter the paper title, the names of all authors, all affiliations, information about the presenting author, the WS/Special Topics of Interest name and presentation preference.
Please understand that the title may be edited by the program committee.
An acceptance/reject notification will be sent to you via the e-mail address that you provided on the website.
- (3) **Confirmation & submission:** Please take time to review the paper title and the author information carefully as mistakes cannot be rectified after the file is uploaded. Select a file name of the Technical Summary to submit to our server. When the file is successfully uploaded, a "FINISH" message will appear on the screen and you will also receive a submission confirmation e-mail.

FORMAT OF PRESENTATION

- (1) **Oral presentations**
 - Oral presentations will usually conform to the 20-minute format

including questions and answers. The program committee will determine the duration of presentation.

- Oral presenters are strongly urged to attend the Author Interviews and Demonstrations after the presentation (AC 100 V power will be made available).

- (2) **Poster presentations**

- Poster presentation will conform to a 3-hour format in front of an individual bulletin board.
- A table and AC 100 V power will be made available.
- "Short Presentation Session" to introduce poster presenters as part of PRJ, EP and DES workshops. All poster presenters in PRJ, EP and DES workshops are required to give a brief, 3-minute oral presentation with no discussion time.

- (3) Accepted papers will be assigned to either oral or poster presentation in the most suitable Workshop/Special Topics of Interest at the discretion of the program committee.

ACCEPTANCE

You will be notified of the results of your Technical Summary review via e-mail. Upon acceptance of the Technical Summary, authors must prepare a camera-ready manuscript to be published in the conference proceedings. The author should use the manuscript template, which will soon be available on the conference website. It will be four pages in length and in a two column format. Acceptance is subject to following conditions:

- (1) Registration is required before the camera-ready submission for all presenters.
- (2) All company or government releases must be obtained.
- (3) The author must be the copyright holder or have written permission from the copyright holder for any material used in the paper.
- (4) Your submitted paper must not be published in any media including personal websites on the Internet before it is presented at the conference.
- (5) One of the authors must give a presentation at the conference.
For the poster session, at least one of the authors must stand by their posters during their core time, which will be set in the session.

LATE-NEWS PAPERS

A limited number of late-news papers reflecting important new findings or developments may be accepted. Authors are requested to submit a 2-page camera-ready manuscript on A4-sized pages accompanied by an abstract. Access the conference website: <http://www.idw.ne.jp/authinfo.html>
Follow the submission instructions given on the website.

COPYRIGHT

The copyrights of your submitted camera-ready manuscript will be transferred to ITE and SID. The copyright terms and conditions are available on the conference website (<http://www.idw.ne.jp/copyright.pdf>).

TRAVEL GRANTS

A limited number of travel grants will be available to full-time student presenters attending from outside Japan. Check the travel grant application box of the online submission mentioned above.

IDW Best Paper Award and IDW Outstanding Poster Paper Award

The award committee of IDW will select the most outstanding papers from those presented at IDW '13. The winners will be announced on the IDW website and given a plaque after the conference. We encourage that young researchers win the awards.

Invited Talks

- **TFT-LCD Manufacturing Technology**
–Current Status and Future Prospects–
Yasuhiro Ukai (Ukai Display Device Inst.)
- **IGZO Technology for the Innovative LCD**
Yoshiharu Kataoka (Sharp)
- **Metal Oxides and Organic Materials for Flexible Displays**
Antonio Facchetti (Northwestern Univ.)
- **Modeling of Thin-Film Transistors with Transparent Amorphous Oxide Semiconductor**
Katsumi Abe (Tokyo Inst. of Tech.)
- **Where is Disruptive Innovation by FPD?**
Takashi Yunogami (Fine Processing Inst.)
- **4K2K Resolution OLED Displays Produced by the RGB All-Printing Method**
Keiichi Otake (Panasonic)
- **New Paradigm in Organic Light Emitting Materials –Hyperfluorescence–**
Chihaya Adachi (Kyushu Univ.)
- **Polymer and Crystalline Small Molecule Organic Semiconductor Materials for Mass Produced Displays**
Mark James (Merck Chems.)
- **Evaluation of Fatigue Caused by Watching 3DTV**
Toshiya Morita (NICT)
- **Surface Quality and Material Perception**
Shigeki Nakauchi (Toyohashi Univ. of Tech.)
- **OLED Pixel Driving Circuit**
Oh-Kyong Kwon (Hanyang Univ.)
- **UHDTV Systems for Wide-Gamut Color Reproduction**
Kenichiro Masaoka (NHK)
- **Obstacle Detection System Using Stereo Vision for Driver Assistance**
Keiji Saneyoshi (Tokyo Inst. of Tech.)
- **How AR Reform Social Medical System?**
Tomohiro Kuroda (Kyoto Univ. Hospital)
- **Mobile Augmented Reality with Localization System for Wide Indoor Area**
Masayuki Kanbara (Nara Inst. of S&T)
- **Single ITO Layer Multi-Touch Sensor Panel**
Reiji Hattori (Kyushu Univ.)
- **A Deformation Detectable Touch Panel Using a Piezoelectric Poly (L-Lactic-Acid) Film**
Masamichi Andoh (Murata Manufacturing)

The titles are tentative.
Additional invited talks are being arranged.

IDW '13 OVERSEAS ADVISORS

| | | | |
|--------------------|---------------------------------------|-------------------|---------------------------------|
| Munisamy Anandan | (Organic Lighting Tech., USA) | Fan-Chen Luo | (AU Optronics, Taiwan) |
| Janglin Chen | (ITRI, Taiwan) | Jean-Noël Perbet | (Thales Avionics, France) |
| Norbert Fruehauf | (Univ. of Stuttgart, Germany) | Kalluri R. Sarma | (Honeywell Int., USA) |
| Min-Koo Han | (Seoul Nat. Univ., Korea) | Han-Ping D. Shieh | (Nat. Chiao Tung Univ., Taiwan) |
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IDW '13



The 20th International Display Workshops

December 4-6, 2013

Sapporo Convention Center, Sapporo, Japan

<http://www.idw.ne.jp/>

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