

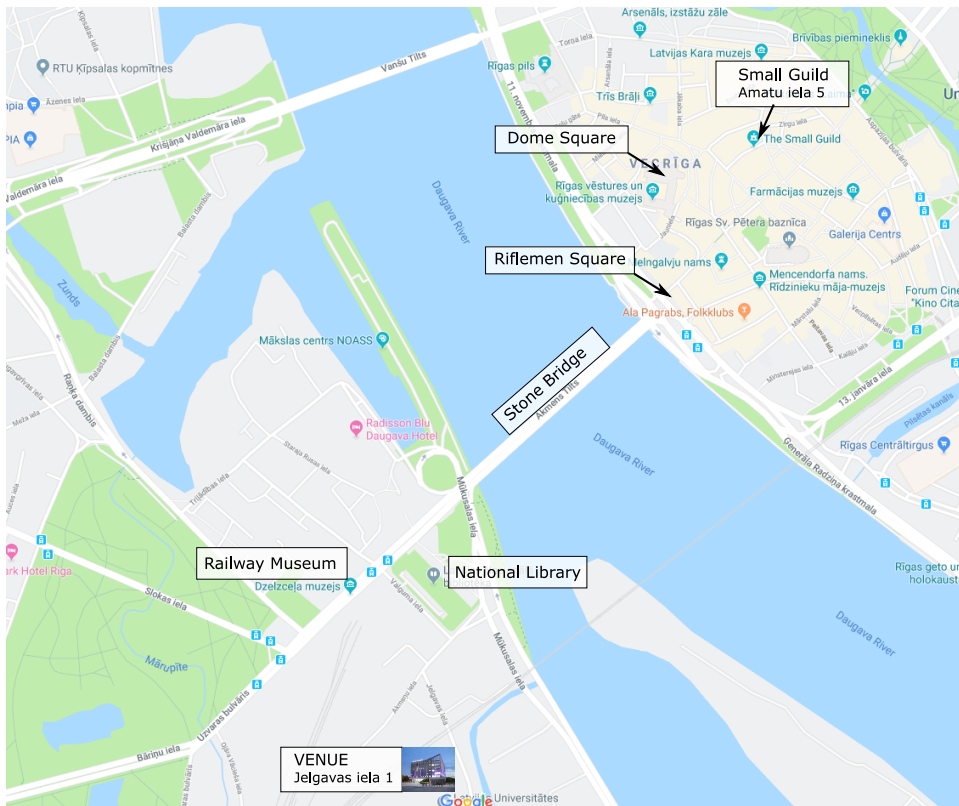


ICVS 2019

University of Latvia, Riga, Latvia

5-9 July 2019

**DETAILED PROGRAMME**



The Patmalnieks Family

NACIONĀLAIS  
ATTĪSTĪBAS  
PLĀNS 2020



EIROPAS SAVIENĪBA  
Eiropas Reģionālās  
attīstības fonds

IEGULDĪJUMS TAVĀ NĀKOTNĒ



LATVIJAS UNIVERSITĀTES  
FONDS

- 09.00 – 13.30 *Director's committee meeting*  
10.00 – 18.00 *Registration desk open*  
13.45 – 14.00 *Opening*

## Central Processing of Colour

*Chairs: Neil Parry, Barry Lee*

- 14.00 – 14.15 **The neural representation of perceived color**  
Steven Shevell, Insub Kim, Won Mok Shim and Sang Wook Hong
- 14.15 – 14.30 **Cortically-stimulating gratings reveal non-cardinal colors better than do LGN-stimulating spots**  
Karen Gunther, Colby Dunigan, Carson Powell and Jorge Rodriguez
- 14.30 – 14.45 **A multivariate approach to the decoding of chromatic and achromatic contrast in the human visual cortex**  
Kathy T Mullen and Erin Goddard
- 14.45 – 15.00 **Hue selectivity of SSVEP responses**  
Ichiro Kuriki, Sae Kaneko and Søren K. Andersen
- 15.10– 15.15 **Diagnostic color elicits selective neural responses to grayscale objects**  
Talia Retter, Bruno Rossion, Fang Jiang and Michael Webster
- 15.15 – 15.45 *Coffee pause*

## INVITED TALK I

*Chair: Barry Lee*

- 15.45 – 16.45 **Form and function in parallel pathways for colour vision**  
Paul Martin

## Retinal Mechanisms of Colour Processing

*Chairs: Kathy Mullen, Rigmor Baraas*

- 16.45 – 17.00 **A new genetic mechanism for tritan color vision deficiency**  
Maureen Neitz, Elise Krekling, Lene A. Hagen, Hilde Pedersen, Jay Neitz and Rigmor Baraas
- 17.00 – 17.15 **Functional Mapping of Human Retina using Heterochromatic Modulation Multifocal Electroretinograms**  
Avinash Aher and Jan Kremers
- 17.15 – 17.30 **Are anomalous pupillary responses to M-cone onsets linked to L:M ratio?**  
Neil Parry, Ian Murray, Xian Li and Elena Rodrigo-Diaz

**17.30 – 17.45 L- and M-cone driven ERG signals in macaques**

Jan Kremers, Avinash Aher, Neil Parry, Nimesh Patel and Laura Frishman

**17.45 – 18.00 Responses of macaque ganglion cells to natural scenes: spatial, temporal and chromatic parameters**

Barry Lee and Manuel Schottdorf



08.30 Registration desk open

## Colour Appearance

*Chairs: Yoko Mizokami, Aušra Daugirdiene*

9.00 – 9.15 **The relationship of brown and brightness inductions**

Steven Buck and Tanner Delawyer

9.15 – 9.30 **The color appearance of three-dimensional, curved, transparent objects**

Robert Ennis and Katja Doerschner

9.30 – 9.45 **The neural basis for encoding black, white and hue sensations**

Sara Patterson, Maureen Neitz and Jay Neitz

9.45 – 10.00 **How to make a #theDress**

Christoph Witzel and Matteo Toscani

10.00 – 10.15 **What is white under coloured lights?**

Anya Hurlbert, Naomi Gross, Ruben Pastilha and Gaurav Gupta

10.15 – 10.45 *Coffee pause*

## Colour Vision Testing

*Chairs: John L Barbur, John S Werner*

10.45 – 11.00 **A new lamp for color vision testing : the True Color LED Lamp**

Jean Leid and Géraldine Kraft

11.00 – 11.15 **Lighting for colour vision examination in the era of LEDs**

Stephen Dain, David Atchison, Jeffrey Hovis and Mei-Ying Boon

11.15 – 11.30 **Paediatric colour vision screening**

Manca Tekavcic Pompe

11.30 – 11.45 **The Cambridge Colour Test: Reproducibility in normal trichromats**

Thiago MP Fernandes, Natanael A Santos and Galina V Paramei

11.45 – 12.00 **Measuring hue discrimination thresholds in infants using inter-observer staircases**

John Maule, Alice Skelton, Lydia Day, Katie Barnes, Anna Franklin and Jenny Bosten

12.00 – 12.45 *Lunch*

## INVITED TALK 2

*Chair: Pablo Barrinuevo*

12.45 – 13.45 **Implications of melanopsin photoreceptor dysfunction in eye disease**

Beatrix Feigl

## Melanopsin and Colour Vision

*Chairs: Dingcai Cao, Andrew Zele*

- 13.45 – 14.15    **Rhodopsin and melanopsin contributions to human brightness estimation**  
Andrew J Zele, Ashim Dey, Prakash Adhikari and Beatrix Feigl
- 14.15 – 14.30    **Adaptation to melanopic stimulation does not alter sensitivity to cone-directed flicker**  
Joris Vincent, Geoffrey K. Aguirre and David H. Brainard
- 14.30 – 14.45    **Opponent modulation of mRGCs and rods in unique-hue color channels**  
Katsunori Okajima, Yoshika Takahashi, Graham Fielder and Alan Robertson
- 14.45 – 17.00    **Posters I & coffee**

## Colour In Painting

*Chairs: Michael Webster, João Linhares*

- 17.00 – 17.15    **Chromatic properties of Japanese paintings are similar to that of European paintings**  
Sho Kishigami, Takuma Morimoto, João MM Linhares, Tetsuto Minami, Shigeki Nakauchi and Sérgio MC Nascimento
- 17.15 – 17.30    **A computational model describing the location of discernible categorical color patterns in paintings**  
Juan Luis Nieves, Yu-Jung Chen, Luis Gomez-Robledo and Javier Romero
- 17.30 – 17.45    **Insights into the Colours of Art – Graffiti and Paintings**  
Claudia Feitosa-Santana, Carlo M. Gaddi and Sérgio MC Nascimento

08.30      *Registration desk open*

## **Luminance and Colour**

*Chairs: Steve Buck, Sylvia Pont*

9.00 – 9.15      **Luminance and chromatic sensitivity at high light levels**

Sophie Wuerger

9.15 – 9.30      **Ensemble processing of heterogeneous luminance disks**

Eiji Kimura and Yusuke Takano

9.30 – 9.45      **Impact of pattern colour and luminance contrast and frequency on onset of peripheral illusory movement perception**

Maris Ozolinsh and Anna Pastare

9.45 – 10.00      **Discriminating purity and discriminating hue**

Marina V Danilova and John D Mollon

10.00 – 10.30      *Coffee pause*

## **Verriest-Medal Lecture**

10.30 – 10.45      Introduction John Mollon

10.45 – 11.45      **Adventures in blue and yellow**

Michael Webster

11.45 – 12.00      *Group photo*

12.00 – 20.00      *Lunch and Excursion*

08.30      *Registration desk open*

## Anomalous Trichromacy

*Chairs: Jan Kremers, Kenneth Knoblauch*

- 9.00 – 9.15      **Verification of the color appearance model for anomalous trichromats based on the shift of cone spectral sensitivities**  
Keiko Sato, Kazumasa Nishitani, Hironori Takimoto
- 9.15 – 9.30      **Hue scaling in anomalous trichromats**  
Ivana Ilic, Kara J Emery and Michael A Webster
- 9.30 – 9.45      **The effectiveness of EnChroma's notch filters in enhancing deuteranomalous colour vision**  
Lucy Somers, Anna Franklin and Jenny Bosten
- 9.45 – 10.00      **Differences in suprathreshold contrast response between normal and anomalous trichromats**  
Kenneth Knoblauch, Brennan Marsh-Armstrong and John S Werner
- 10.00 – 10.15      **Changes in suprathreshold contrast response of anomalous trichromats after wearing color filters**  
John S Werner, Brennan Marsh-Armstrong and Kenneth Knoblauch
- 10.15 – 10.45      *Coffee pause*

## Colour Vision Assessment

*Chairs: Stephen Dain, Sergejs Fomins*

- 10.45 – 11.15      **Colour Assessment Outcomes – Implications for Employment**  
John L Barbur, Benjamin EW Evans and Marisa Rodriguez-Carmona
- 11.15 – 11.30      **Genetic testing for colour vision deficiencies and the limitation of standard pseudo-isochromatic plates**  
Rigmor C Baraas, Solveig Arnegard, Lene A Hagen, Jay Neitz and Maureen Neitz
- 11.30 – 11.45      **An iPad app to measure colour discrimination in the field**  
Alice Skelton, Miranda Longworth-Krafft, James Alvarez, John Maule, Anna Franklin and Jenny Bosten
- 11.45 – 12.00      **Establishing the equivalency between computer color vision tests, Holmes-wright lantern and Farnsworth-Munsell D15 for Canadian aviation**  
Jeffery Hovis, Ali Almustanyir and Mackenzie Glaholt

**12.00 – 12.15    The retinal mosaic, eye movements and colour vision**

Sarah E Regan, Allie C Hexley, Anna-Katharina Hauperich, Laura K Young, Hannah E Smithson

12.15 – 13.00    *Lunch*

**INVITED TALK 3**

*Chair: Anya Hurlbert*

**13.00 – 14.00    Light and colour in the wild**

Silvia Pont

**Lighting and Material Properties**

*Chair: Anya Hurlbert*

**14.00 – 14.15    The temporal dynamics of daylight: Speed limits on perception**

Ruben Pastilha, Gaurav Gupta and Anya Hurlbert

**14.15 – 14.30    Hyperspectral environmental illumination: directional spectral variation and a revisit of metamerism in the real world**

Takuma Morimoto, Sho Kishigami, João MM Linhares, Sérgio MC Nascimento and Hannah E Smithson

**14.30 – 14.45    Material qualities, image statistics, and visual features of coated metal surfaces**

Joshua Harvey and Hannah E Smithson

**14.45 – 17.00    POSTERS II & Coffee**

**Colour Cognition**

*Chairs: Galina Paramei, Keizo Shinomori*

**17.00 – 17.15    Mapping colour names in cone excitation space**

Dimitris Mylonas, Lewis D Griffin and Andrew Stockman

**17.15 – 17.30    What do bright, light and dark mean? The meanings of common color modifiers in a cross-linguistic perspective**

David Bimler and Mari Uusküla

17.30 – 17.45 **Colour categories in short wavelength spectrum among Latvian and Russian mono and bilinguals**

Renārs Trukša, Samanta Gabrāne, Katrīna Lazdāne, Sergejs Fomins and Gunta Krūmiņa

17.45 – 18.00 **Relationship between semantic words and colour impressions for normal and colour deficient observers**

Keizo Shinomori, Honami Komatsu and Ippei Negishi

## Grouping and Attention

*Chairs: Marina Danilova, Steven Shevell*

- 9.00 – 9.15     **Grouping ambiguous neural representations: Are they driven by chromaticity (the stimulus) or by color (the percept)?**  
Emily Slezak and Steven K Shevell
- 9.15 – 9.30     **Grouping from Rivalrous Color and Form**  
Andrew Coia and Steven K Shevell
- 9.30 – 9.45     **Not all ambiguities are created equally: differential grouping by type of visual ambiguity**  
Sunny MS Lee, Emily Slezak and Steven K Shevell
- 9.45 – 10.00   **Helix Rotation: A new twist on Pulfrich and Hess for investigating color and depth perception in virtual reality**  
Arthur G Shapiro, Anthony Loprete and Lily Donaldson
- 10.00 – 10.15   **Inverted Helmholtz-Kohlrausch effect in facial images**  
Katsuaki Sakata and Hitomi Shimakura
- 10.15 – 10.45   *Coffee pause*

## Colour Constancy

*Chairs: Sérgio MC Nascimento, Arthur Shapiro*

- 10.45 – 11.00   **Saturated colours found in natural scenes can degrade colour constancy**  
David Foster and Adam Reeves
- 11.00 – 11.15   **Spatial color channels and their role in color constancy**  
Laysa Hedjar, Wenyan Bi and Arthur G. Shapiro
- 11.15 – 11.30   **Differential ipRGC stimulation of colored stimuli influences perception of brightness in a spatial 2AFC task**  
Tanner DeLawyer, Sei-Ichi Tsujimura and Keizo Shinomori
- 11.30 – 11.45   **Assessing the effectiveness of a melanopsin-based signal for colour constancy**  
Daniel Garside and Lindsay MacDonald
- 11.45 – 12.00   **Melanopsin activation could enhance color constancy**  
Dingcai Cao, Clemente Paz-Filgueira and Michael Tan
- 12.00 – 13.00   *Business meeting*
- 13.00 – 13.15   *Closing*

**1. Validity of virtual-reality-based systems applied to lighting and colour rendering research**

Pedro J Pardo, Halina C Cwierz, Francisco D Barrancas, Angel LP Rodriguez and Maria I Suero

**2. Non-linear color additivity in time domain**

Lin Shi

**3. ProLab: perceptually uniform projective colour coordinates system**

Ivan Konovalenko, Anna Smagina, Vladislav Kokhan and Dmitry Nikolaev

**4. Pupillary change depends on stimulus duration and luminance when blind-spot is stimulated with blue light**

Tim Schilling, Yeshwanth Seshadri, Mojtaba Soltanlou and Hamed Bahmani

**5. Blue light-filtering IOLs vs non-blue light-filtering IOLs: Influence of different spectral power distributions (SPD)**

Beatriz M Matesanz, Eduardo G Vicente and David Galarreta

**6. Farnsworth D-15 model proposes significant role of blue-yellow channel in anomalous observers**

Sergejs Fomins, Renārs Trukša, Gunta Krūmiņa and Maris Ozolinsh

**7. Multiplicative modulations in hue-selective cells enhance unique hue representation**

Paria Mehrani and John KT Robertson

**8. Effect of correlated color temperature of road lighting's LEDs on mesopic visual performance**

Isabel Arranz, Eduardo G Vicente, Santiago Mar and Beatriz M Matesanz

**9. Seeing fruit on trees: Amplified perceptual differences from ambiguous neural representations**

Jaelyn Peiso and Steven K Shevell

**10. The Impact of Colour in Deep Neuronal Networks Object Classification**

Arash Akbarinia and Karl R Gegenfurtner

**11. Mechanisms of color vision and dyschromatopsia**

Justyna Niewiadomska-Kaplar

**12. Improvement of realism sensation in virtual reality scenes applying spectral and colour management techniques**

Francisco D Barrancas, Halina C Cwierz, Pedro J Pardo, Angel LP Rodriguez and Maria I Suero

**13. Color constant representations in early visual cortex**

Anke M Albers, Elisabeth Baumgartner, Hanna Gertz and Karl R Gegenfurtner

**14. Hue selectivity of collinear facilitation with and without luminance noise**

Tomoharu Sato, Takehiro Nagai and Ichiro Kuriki

**15. Is red colour dazzling and outstandingly bright for anyone?**

Yasuyo G Ichihara and Takashi Sakamoto

**16. The Role of Melanopsin Activation in Peripheral Color Matching Functions**

Pablo A. Barrionuevo and Dingcai Cao



**17. Assessment of colour discrimination in patients with hypothyroidism before drug treatment using Farnsworth Munsell 100 hue test**

Kalina Racheva, Tsvetalin Totev, Emil Natchev, Raymond Beirne and Margarita Zlatkova

**18. Spatial summation and resolution acuity of colour mechanisms in peripheral retina**

Margarita Zlatkova, Kalina Racheva, Tsvetalin Totev, Milena Mihaylova, Ivan Hristov and Roger Anderson

**19. Remote simultaneous color contrast and assimilation effects across the L-M cone axis**

Tama Kanematsu and Kowa Koida

**20. The Rayleigh match on the peripheral retina**

Alexander Belokopytov, Egor Ershov, Ilia Nikolaev and Peter Nikolaev

**21. A pilot perimetric study of far peripheral color vision using two smartphones**

Galina Rozhkova, Alexander Belokopytov, Egor Ershov, Ilia Nikolaev and Peter Nikolaev

**22. Spectral imaging of the skin of human faces: a comparison of different methodologies**

João MM Linhares, Andreia E Gomes, Ricardo JF Pereira and Sérgio MC Nascimento

**23. Advantages and shortcomings of using a contact lens with an implanted occluder in the assessment of peripheral color vision**

Elena Iomdina, Olga Selina, Galina Rozhkova, Alexander Belokopytov, Egor Ershov, Ilia Nikolaev and Peter Nikolaev

**24. Visual acuity, Colour discrimination in patient with cataract**

Zane Jansone and Maris Ozolinsh

**25. Color contrast adaptation to temporal variations on complex luminance-chromaticity loci**

Takehiro Nagai, Kana Kakuta, Tomonori Tashiro and Yasuki Yamauchi

**26. Plaid from orthogonal rivalrous gratings and binocular resolution of competing neural representations**

Xiaohua Zhuang and Steven K Shevell

**27. Congenital red-green colorblindness confined to one eye**

Alex Neitz, Maureen Neitz and Jay Neitz

**28. Influence of stimulus complexity on the gamut expansion effect**

Taiga Mikami and Yoko Mizokami

**29. Age-related change in preference for chromatic compositions of art paintings revealed by 30K-subjects experiment**

Shigeki Nakauchi, Masaya Nishimoto and Hideki Tamura

**30. Color and orientation resolution in Necker cubes with chromatic rivalry**

Ryan Lange and Steven K Shevell

**31. Can differences in crystalline lens thickness explain differences in estimates of L:M cone ratio between young males and females?**

Lene A Hagen, Solveig Arnegard, James A Kuchenbecker, Stuart J Gilson, Maureen Neitz, Jay Neitz and Rigmor C Baraas

**32. Contrast thresholds as a function of stimulus luminance for two commercial computerised colour vision tests**

Mei Ying Boon, Abdulaziz Alotaibi and Stephen Dain

**33. ColourSpot: Tablet based app for screening for colour vision deficiency in young children**

Teresa Tang, Leticia Álvaro, James Alvarez, Brenda Meyer, John Maule, Anna Franklin and Jenny Bosten

**34. The chromatic structure of paintings from pre-primary children**

Catarina FM Herdeiro, João MM Linhares and Sérgio MC Nascimento

**35. Towards a better understanding of visual snow**

Simon Saryazdi and Jenny Bosten

**36. Colorfulness adaptation and naturalness in the combination of saturation and lightness contrast on images**

Taishi Masumitsu and Yoko Mizokami

**37. Experimental comparison between elderly colour vision and colour vision simulated with the lens ageing model: Visibility of handrails under photopic and mesopic vision environment**

Takashi Sakamoto, Yuri Kajimura, Akiko Kubo, Masafumi Yoneda, Hiroyuki Hagiwara, Koji Kitamura, Yoshifumi Nishida and Yasuyo G Ichihara

**38. Colour comparisons of natural scenes under changes in lighting geometry**

Zeinab Tirandaz and David Foster

**39. When do children develop adult-like colour constancy?**

Rebecca Wedge-Roberts, Stacey Aston, Ulrik Beierholm, Bob Kentridge, Maria Olkkonen and Marko Nardini

**40. Colour-specific responses of the goldfish retinal ganglion cells revealed by cone-isolated visual stimulation**

Paul Maximov, Alexey Aliper and Elena Maximova

**41. Internal white points measured by achromatic adjustment**

Gaurav Gupta, Anya Hurlbert, Naomi Gross and Ruben Pastilha

**42. Best lighting for viewing the skin of human faces**

Andreia E Gomes, João MM Linhares, Ricardo JF Pereira and Sérgio MC Nascimento

**43. The influence of modifying colours to simulate colour-appearance for colour deficient observers on the relationship between semantic words and colours**

Ippei Negishi, Honami Komatsu and Keizo Shinomori

**44. Do luminance and brightness differences mediate in colour assimilation?**

Xim Cerda-Company, Xavier Otazu and Alejandro C Parraga

**45. Spectral density curves of the human lens are inaccurate due to increased Rayleigh scatter in post mortem eyes**

James A Kuchenbecker, Maureen Neitz and Jay Neitz

**46. Relationship between perifoveal L-cone isolating spatial acuity and retinal structure in early and intermediate AMD**

Hilde R. Pedersen, Åshild B Horjen, Stuart J Gilson and Rigmor C Baraas

**47. Early Infancy Development of Discrimination in Protan, Deutan and Tritan Color Confusion Axes using 2-AFC version of the Cambridge Colour Test**

Marcelo Costa, Leonardo D Henriques and Dora F Ventura

**48. A Quadratic Model of the fMRI BOLD Response to Chromatic Modulations in V1**

Michael Barnett, Geoffrey Aguirre and David Brainard

**49. A 3-Sensor Tetrachromatic System suited for Measuring Real-World Colour**

Thomas Bangert and Ebroul Izquierdo

**50. Operational based vision assessment: color deficiency and performance with high contrast pilot visor compared to clear visor**

Steven Hadley, James Gaska and Marc Winterbottom

**51. Dynamics of Adaptation During 1 Hour of Wearing Colored Filters**

Yanjun Li, Katherine Tregillus and Stephen Engel

**52. Predicting color matches from luminance matches**

Kassandra R Lee, Alex J Richardson, Eric Walowit, Michael A Crognale and Michael A Webster

**53. Effect of cone spectral topography on achromatic and chromatic detection sensitivity**

Ramkumar Sabesan, Alexandra Neitz, Xiaoyun Jiang, James A Kuchenbecker, Sara Patterson, Maureen Neitz, Jay Neitz and Daniel Coates

**54. Spatiotemporal pattern analysis of chromatic visual evoked potentials**

John Vanston and Michael A Crognale

**55. Categorical effects on color appearance**

Kara J Emery, Courtney Matera, Vicki J Volbrecht, David H Peterzell, Kavita Vemuri, Paul Kay and Michael A Webster

**56. An exploratory analysis of the Farnsworth D-15 test**

Benjamin EW Evans, Marisa Rodriguez-Carmona and John L Barbur

**57. Spectral optimization to vary colorfulness of individual paintings with a tunable LED light source**

Eduardo G Vicente, Sérgio MC Nascimento and João MM Linhares

**58. Prevalence of color vision deficiency among school age children in Latvia**

Evita Kassaliete, Gatis Ikaunieks, Aiga Švede, Sergejs Fomins, Gunta Krūmiņa

**59. Comparison of brightness perception of facial skin with differences of skin color**

Yuan Yuan He, Taiga Mikami, Suguru Tanaka, Yoko Mizokami

*\*Posters can be held on stands throughout the symposium.*

*Poster assignments: on Saturday 6<sup>th</sup> July (poster session I; odd numbers) and Monday 8<sup>th</sup> July (poster session II; even numbers).*