preferred display gamma value. Before conducting main experiment, we examined the pre-test that showed the change of visibility as surround luminance increased. We confirmed that visibility of low gray levels on the image degraded when the surround condition was bright. Next, we investigated the preferred display gamma value of a transparent OLED display under various surround conditions. The result showed that the preferred gamma value decreased as surround luminance increased. Finally, we explored the cause of lowering of the preferred gamma value by measuring distinguishability of various gammas. This result implied that the lower gamma might be preferred because distinguishability of the low gray levels on the images increases as the surround luminance increases.

Temporal Transition Enhances the Consonance of Color Arrangements,
Akira Asano and Shinji Tatsumi, Kansai University; Chie Muraki Asano, Nagoya Women's University; Katsunori Okajima, Yokohama National University; and Mikiko Kawasumi, Meijo University (Japan) **240**
We found a similarity between the effect of temporal chord transition in music and temporal color transition in visual perception. Human visual impressions between a color arrangement and a temporal transition from a modified arrangement to the original arrangement were compared in experiments with sensory tests. The experimental results showed that the consonance of color arrangements can be enhanced by a "pivoted" transition, in which some appearance parameters like hues and color tones are preserved, from a dissonant arrangement in comparison with a static presentation of the original arrangement. The results suggest that an enhancement effect of consonance similar to resolution of chords in music exists in a higher order mechanism of human color vision.

Combinational Color Constancy Method Using Dynamic Weights,
Shibudas Kattakkalil Subhashdas, Ji-Hoon Yoo, Bong-Seok Choi, and Yeong-Ho Ha, Kyungpook National University (South Korea). **245**
Illuminant estimation is the primary step to solve the colour constancy problem. Already, various unitary algorithms were proposed to estimate illuminant chromaticity. Since the existing methods are all based on specific spatial and spectral characteristics of images, there is no unique algorithm which can perform well on images with different settings and scenes. Therefore, this paper proposes an illuminant estimation framework which combines the best performing unitary methods using dynamic weight. The proposed method uses edge and colour features to generate the dynamic weight. Experimental results on real-world data set clearly demonstrate the effectiveness of the proposed method.

Spectral Predictions of Rough Ink Layers Using a Four-Flux Model,
Théo Phan Van Song[1,2], Christine Andraud[2], and Maria Ortiz-Segovia[1]; [1]Océ Print Logic Technologies and [2]Centre de Recherche sur la Conservation des Collections (France) **251**
Predicting how light propagates through a stack of ink layers for spectral reproduction is a challenge only optical models can face. In particular, the four-flux model offers directional information about the part of light specularly reflected and transmitted and the part of light scattered in other directions. The surface roughness influences strongly the ratios of collimated and diffused light. In this paper, we describe how a radiative transfer four-flux matrix model can account for rough interfaces and show how roughness impacts the measured components of the reflectance and the transmittance of stacks of ink printed with different textures. The measurements are then compared to computations of the model with colorimetric and spectral metrics. Results are encouraging, considering that the predictions are made without any measurements directly inputted into the model, with the median color difference mostly below 2 ΔE_{94} units for total reflectance and transmittance whatever the roughness.

Effect of Area on Color Harmony in Simulated Interiors,
Seden Odabasioglu, Marmara University, and Nilgün Olguntürk, Bilkent University (Turkey) **258**
The main aim of this study is to examine the effect of area on color harmony in simulated interior spaces. Area in color harmony is the relative amount of different color areas represented as a proportion, on which color harmony depends. Colors in the color scheme of an interior space are usually not applied in equal proportions of surface areas. Considering the complex relations of colors in interiors, it is important to search for the principles of color harmony and area effects. The secondary aim of the study is to investigate how the term color harmony is defined and the link between color harmony and related terms used to define it. The related terms that are used to define color harmony can explain why a color scheme is evaluated as harmonious. In this study, three primary (red, blue, yellow) and three secondary (green, purple, orange) colors of Itten's color wheel were studied in a simulated office interior with three-color schemes emphasizing different proportional use of each color. There were four color combinations, each consisting of six images differing in areas of the constituent colors. Firstly, participants evaluated the harmony content of the images by comparing them in pairs. Secondly, they evaluated each image regarding the thirteen terms related to color harmony. Findings indicated that area had an effect on color harmony for two of the color combinations (warm and cool color schemes). However, there were no strong but rather moderate and weak correlations between color harmony and the terms.

A Uniform and Hue Linear Color Space for Perceptual Image Processing Including HDR and Wide Gamut Image Signals, *Muhammad Safdar[1], Ming Ronnier Luo[1,2], Guihua Cui[3], and Youn Jin Kim[4]; [1]Zhejiang University (China); [2]University of Leeds (UK); [3]Wenzhou University (China); and [4]Huawei Technologies Co., Ltd. (China)* **264**
A color space that is perceptually uniform, linear in iso-hue directions, can uniformly encode high dynamic range and wide gamut signals, and is computationally efficient, has been long desired. The available color spaces do not meet all these requirements satisfactorily and comprehensively. Performance of a recently proposed uniform and hue linear color space, Jzazbz, is compared with the state of the art color spaces and results are presented. This study suggests a single uniform color space for perceptual image processing, wherever desired, in different applications.

Device Independent Graininess Reproduction: Preliminary Study,
Junki Yoshii[1], Shoji Yamamoto[2], Yuto Hirasawa[1], Hiroshi Kintou[3], and Norimichi Tsumura[1]; [1]Chiba University, [2]Tokyo Metropolitan College of Industrial Technology, and [3]Nikon Corporation. (Japan) **269**
In this paper, we propose a psychophysically-based model of graininess perception for device independent graininess reproduction system. This model is developed by conducting an experiment to explore the relationship among 1) subjective evaluation values for various graininess objects, 2) physical parameters used to generate the graininess objects and 3) values of maximum luminance on the display for reproduction. In the experiment to obtain the subjective evaluation values, the magnitude estimation method was used to quantify the graininess perception. The graininess model obtained by multiple regression analysis for the above values can be used to calculate curved surfaces where the graininess objects are observed as the equal appearance. This surface can be used for device independent graininess reproduction process to match the graininess under the displays with various maximum luminance. In this process, even if the values of maximum luminance on the display is changed in the model, the value of graininess under the changed luminance is hold by changing the physical parameters of graininess generation in the model. In the practical experiment, we found that the