

การจำแนกคุณภาพสีของทับทิมและไฟลีนด้วยระบบสี CIELUV และ MUNSELL

นางสาวพรรณนภา เผ่าถนอม

ศูนย์วิทยทรัพยากร

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต  
สาขาวิชาเทคโนโลยีทางภาพ ภาควิชาวิทยาศาสตร์ทางภาพถ่ายและเทคโนโลยีทางการพิมพ์

คณะวิทยาศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย


ปีการศึกษา 2545

ISBN 974-17-1171-9

ลิขสิทธิ์ของจุฬาลงกรณ์มหาวิทยาลัย

I20473278

COLOR QUALITY CLASSIFICATION OF RUBY AND BLUE SAPPHIRE BY CIELUV AND MUNSELL  
COLOR SYSTEMS



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A Thesis Submitted in Partial Fulfillment of the Requirements  
for the Degree of Master of Science in Imaging Technology  
Department of Photographic Science and Printing Technology

Faculty of Science  
Chulalongkorn University  
Academic Year 2002  
ISBN 974-17-1171-9



พรรณนภา เผ่าถนอม : การจำแนกคุณภาพสีของทับทิมและไพลินด้วยระบบสี CIELUV และ MUNSELL (COLOR QUALITY CLASSIFICATION OF RUBY AND BLUE SAPPHIRE BY CIELUV AND MUNSELL COLOR SYSTEMS) อ.ที่ปรึกษา : รศ. พรทวิ พึ่งรัศมี, 143 หน้า. ISBN 974-17-1171-9.

งานวิจัยนี้ศึกษาการจำแนกคุณภาพสีของทับทิมและไพลินด้วยระบบสีมันเชลล์ ซีไออีแอลยูวี และซีไออีแอลเอบี โดยนำนักอัญมณีศาสตร์มาทำการเทียบสีระหว่างพลอยกับแถบสีมันเชลล์ภายใต้สภาวะแวดล้อมที่กำหนด แล้วนำรหัสสีมันเชลล์แปลงเข้าสู่ระบบสีซีไออีแอลยูวีและซีไออีแอลเอบี ทับทิมและไพลินที่นำมาทดลองนี้ถูกกำหนดลำดับคุณภาพสีไว้ 6 ลำดับเรียงจากความเข้มถึงความสว่างโดยบริษัทอัญมณีและเครื่องประดับชั้นนำ จากการทดลองเมื่อจำแนกตามลำดับความสว่างในโดอะแกรมซีไออีแอลยูวี สามารถระบุลำดับคุณภาพสีโดยพิจารณาระยะห่างระหว่างจุดพิกัดของพลอยและจุดพิกัดของแหล่งกำเนิดแสงซึ่งระยะห่างแสดงถึงความอิ่มตัวสี ระยะห่างมากคุณภาพสีสูง จากผลการทดลองสามารถระบุได้ดังนี้ สำหรับทับทิมพบลำดับความสว่างทั้งหมดมี 4 ลำดับดังนี้ ความสว่างที่ 20.54 ("Dark Red" และ "Deep Red") ความสว่างที่ 30.77 ("Deep Red") ความสว่างที่ 41.22 ("Deep Red") ความสว่างที่ 51.57 ("Vivid Red" และ "Pinkish Red") สำหรับไพลินลำดับความสว่างทั้งหมดมี 2 ลำดับดังนี้ ความสว่างที่ 20.54 ("Dark Blue", "Deep Blue", "Vivid Blue", Strong Blue" และ "Purplish Blue") ความสว่างที่ 30.77 ("Vivid Blue" และ "Strong Blue") นอกจากนี้การหาความแตกต่างของกลุ่มลำดับคุณภาพสีสามารถพิจารณาจากโดอะแกรมซีไออีแอลเอบี โดยพิจารณาจากค่าเฉลี่ย  $L^* a^* b^*$  ของแต่ละกลุ่ม พบว่าสำหรับทับทิมตั้งแต่ลำดับ "Dark Red" ถึง "Pinkish Red" มีแนวโน้มความเข้มสีแดงเพิ่มขึ้น สำหรับไพลินตั้งแต่ลำดับ "Dark Blue" ถึง "Strong Blue" มีแนวโน้มความเข้มสีน้ำเงินเพิ่มขึ้น และลำดับ "Purplish Blue" และ "Greenish Blue" เริ่มมีสีเขียวผสมมากขึ้น

จุฬาลงกรณ์มหาวิทยาลัย

ภาควิชา.วิทยาศาสตร์ทางภาพถ่ายและเทคโนโลยีทางการพิมพ์...ลายมือชื่อ...พรรณนภา...เผ่าถนอม...

สาขาวิชา...เทคโนโลยีทางภาพ.....ลายมือชื่ออาจารย์ที่ปรึกษา.....

ปีการศึกษา...2545...

## 4272346323 : MAJOR IMAGING TECHNOLOGY

KEY WORD : COLOR COMMUNICATION/ VISUAL EVALUATION

PANNAPA PAOTANOM : COLOR QUALITY CLASSIFICATION OF RUBY AND BLUE  
SAPPHIRE BY CIELUV AND MUNSELL COLOR SYSTEMS. THESIS ADVISOR :  
ASSOCIATE PROFESSOR PONTAWEE PUNGRASSAMEE, M.S., 143 pp.  
ISBN 974-17-1171-9.

This research studies the color quality classification of the ruby and blue sapphire by Munsell, CIELUV and CIELAB color systems. The gemologists evaluated the color characteristics of gemstones through the visual sensation by matching the gemstones with the Munsell's color chips under the controlled illumination. Then the HV/C values were converted to the CIELUV and CIELAB color systems. The studied rubies and blue sapphires sets were classified from dark to light into 6 groups by the leading gems and jewelry trading companies. From the u' v' diagrams at different lightness levels were classified the color quality by consideration of the distance between the light source and the gemstone coordinates, that shown the color saturation. The longer distance was the higher color quality. From the experiment, it was found that there were four lightness levels of the ruby, L\* 20.54 ("Dark Red" and "Deep Red"), L\* 30.77 ("Deep Red"), L\* 41.22 ("Deep Red"), L\* 51.71 ("Vivid Red" and "Pinkish Red") and two lightness levels of blue sapphire, L\* 20.54 ("Dark Blue", "Deep Blue", "Vivid Blue", "Strong Blue" and "Purplish Blue"), L\* 30.77 ("Vivid Blue" and "Strong Blue"). The color difference of the gemstone classification was considered from the L\* a\* b\* diagram by the average values. The ruby had tendency to be more red from the "Dark Red" to "Pinkish Red" classifications. The blue sapphire had tendency to be more blue from the "Dark Blue" to "Strong Blue" classifications. And the green color was found in the "Purplish Blue" and "Greenish Blue" classifications.

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Field of study..Imaging Technology..... Advisor's signature *P. Pongrassamee*.....

Academic year...2002...

## ACKNOWLEDGEMENTS

I would like to express my highest gratitude to Professor Sakda Siripant for his co-advisor through the experiment, encouraging guidance, helpful suggestions and kind supervision, increase the knowledge of information about gems and jewelry. In order to achieve this goal of the gemstone samples for the experiment by Professor Sakda Siripant for his interesting to collection from the leading gems and jewelry trading companies. Finally thank you for valuable suggestion, help in training throughout the course of the work and for his kind instruction, guidance and care when I carried out the experiment at The Gem and Jewelry Institute of Thailand (GIT).

I wish to express my sincere appreciation to my advisor, Associate Professor Pontawee Pungrassamee for her kind supervision, invaluable guidance and for her review of the thesis. In addition, I would like to thank you Professor Suda Kiatkamjornwong for being the chairman, Associate Professor Dr. Aran Hansuebsai, Dr. Pichayada Gatemake for their suggestions through the experiments. Finally special thank you to Professor Mitsuo Ikeda for his invaluable guidance and review of the thesis and Associate Professor Nuanchan Therapat for her supervision of statistics throughout the research.

Most of all, I would like to express my highest gratitude to my parents who have always been the source of my support and encouragement.

Finally, I would express my deeply thank to the gemmologists of the Gemmological Testing Laboratory and thankful to Mr. Anupong Laohathanakom for giving me an information to complete this work.

Pannapa Paotanom



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