

การพัฒนาวิธีวิเคราะห์แคตไอออนโลหะแทรนซิชันบางชนิดด้วยทินแลย์โครมาโทกราฟีโดยใช้  
แอลฟาไดออกซิมีเป็นสารที่ทำให้เกิดสารเชิงซ้อน

นางสาวสายวรุพ คุ่มไทย



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**DEVELOPMENT OF ANALYTICAL METHODS FOR SOME TRANSITION  
METAL CATIONS BY THIN-LAYER CHROMATOGRAPHY USING  
 $\alpha$ -DIOXIMES AS COMPLEXING AGENTS**



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SAYWARUL KHOMTHAI : DEVELOPMENT OF ANALYTICAL METHODS FOR SOME TRANSITION METAL CATIONS BY THIN-LAYER CHROMATOGRAPHY USING  $\alpha$ -DIOXIMES AS COMPLEXING AGENTS.

THESIS ADVISOR : ASSOC. PROF. SIRI VAROTHAI, Ph.D.

THESIS CO-ADVISOR : Mr. PONWASON EAMCHAN, M.Sc. 125 pp.

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In this study, separation and quantitative determinations of some transition metal cations by complexing thin-layer chromatography and densitometry were developed. Nickel(II) and palladium(II) were clearly separated from chromium(III), manganese(II), iron(III), cobalt(II) and copper(II) on precoated silica gel layer in hexane, chloroform and ethanol mixed solvent systems containing the  $\alpha$ -dioximes : dimethylglyoxime, benzildioxime, furildioxime or nioxime; as specific complexing agents. The developing solution systems containing various compositions and concentrations of solvents and ligands were investigated and utilized. Quantification of nickel(II) and palladium(II) on the TLC plate by densitometer were also achieved in the concentration of 5 to 80 nanograms. The addition of triethanolamine in the developing solution was attempted to mask interfering metal ions in the binary mixtures and certified reference alloys. Finally, the proposed method developed in this study was applied to the determination of nickel in the certified reference alloys giving a satisfactory result with a relative standard deviation of less than 5 percent and a relative error of less than 1.0 percent.

ภาควิชา.....

ลายมือชื่อ นิสิต.....

สาขาวิชา.....

ลายมือชื่อ อาจารย์ที่ปรึกษา.....

ปีการศึกษา.....

ลายมือชื่อ อาจารย์ที่ปรึกษาร่วม.....

สาขารุข คัมไทย : การพัฒนาวิธีวิเคราะห์แคตไอออนโลหะแทรนซิชันบางชนิดด้วยทินแลย์โครมาโทกราฟีโดยใช้แอลฟาไดออกซิมเป็นสารที่ทำให้เกิดสารเชิงซ้อน (DEVELOPMENT OF ANALYTICAL METHODS FOR SOME TRANSITION METAL CATIONS BY THIN-LAYER CHROMATOGRAPHY USING  $\alpha$ -DIOXIMES AS COMPLEXING AGENTS)


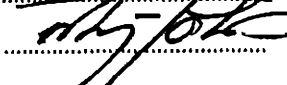
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ในการศึกษานี้ได้พัฒนาการแยกและการวิเคราะห์แคตไอออนโลหะแทรนซิชันบางชนิดโดยใช้เทคนิคทินแลย์โครมาโทกราฟีของสารเชิงซ้อนและเคนซีโทเมตรี นิกเกิล(II)และแพลเลเดียม(II)แยกออกจากโลหะโครเมียม(III) แมงกานีส(II) เหล็ก(III) โคบอลต์(II) และ ทองแดง(II) อย่างชัดเจนบนแผ่นซีลิกาเจลสำเร็จรูป ในระบบตัวทำละลายผสมระหว่างเฮกเซน คลอโรฟอร์ม และ เอทานอลที่ประกอบด้วยแอลฟาไดออกซิมคือ ไดเมทิลไกลออกซิม หรือ เบนซิลไดออกซิม หรือ พูริลไดออกซิม หรือ นีออกซิม ซึ่งเป็นสารที่ให้ความจำเพาะในการเกิดสารเชิงซ้อน ได้ศึกษาระบบสารละลายสำหรับดีเวลอปที่ประกอบด้วยตัวทำละลายผสมและลิแกนด์ที่มีองค์ประกอบและความเข้มข้นต่างๆ กันและนำไปใช้ประโยชน์ การวิเคราะห์ปริมาณนิกเกิล(II)และแพลเลเดียม(II) บนแผ่นทินแลย์โดยเครื่องมาตรฐานความทึบแสงทำได้ในช่วง 5 ถึง 10 นาโนกรัม ได้เติมไตรเอทานอลามีนในสารละลายสำหรับดีเวลอปเพื่อป้องกันการรบกวนในคูโลหะผสมและ certified reference alloys ให้ผลเป็นที่น่าพอใจ โดยมีค่าเบี่ยงเบนมาตรฐานน้อยกว่า 5 เปอร์เซ็นต์ และมีความผิดพลาดน้อยกว่า 1.0 เปอร์เซ็นต์

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