

**Vacuum Operated 2.45 GHz Microwave
Plasma Source for Low-Energy
Ion Beam Neutralization**

The seal of Chiang Mai University is a large, faint circular watermark in the background. It features an elephant in the center, holding a torch aloft in its trunk. The text "CHANG MAI UNIVERSITY 1964" is written around the bottom half of the circle, and Thai script is written around the top half.

MIN MEDHISUWAKUL

**DOCTOR OF PHILOSOPHY
IN PHYSICS**

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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GRADUATE SCHOOL

CHIANG MAI UNIVERSITY

MARCH 2006

ISBN 974-9890-93-0

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Plasma Source for Low-Energy
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MIN MEDHISUWAKUL

A THESIS SUBMITTED TO THE GRADUATE SCHOOL IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN PHYSICS

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30 March 2006

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ACKNOWLEDGEMENT

I am truly grateful to Prof.Dr.Thiraphat Vilaithong for his advice and encouragement throughout this study. I still remember the first time I met him in the electromagnetic theory class where he recruited me to work in the Fast Neutron Research Facility. He has given his valuable time to advise me on my project since I was an undergraduate student. He offered me a big opportunity to continue my study as a Ph.D. student in the Royal Golden Jubilee program. He has been so kind giving me his valuable suggestions and encouragement through years on my work. For his belief and trustful in myself, for his support, for understanding me, and for being my teacher I thank him.

Prof.Dr.Jürgen Engemann is specially acknowledged for his valuable discussions and a very kind hospitality and support through all the time I spent in Germany.

Asst.Prof.Dr.Dheerawan Boonyawan is cited for his useful discussion and support of the RF multicusp ion source used for producing the ion beam for all experiments.

I would like to thank all of the staff in Fast Neutron Research Facility for their support of any kind, notably, Mr.Rachen Charoennukul, Mr.Chome Thongluam, Mr.Rabiab Suwannakosum, Ms.Sumattana Tararax and Ms.Kusumal Dechthammamong.

Mr.Michael Rhodes is cited for his nice work on double probe voltage scanning system. Mr.Somwan Chumpongpan is remembered for his help on scintillating

beam profile monitor. Mr.Phurithat Chaiwattanakul is thanked for his helps on many experiments.

My lovely friends, Sakhorn Rimjaem and Pimporn Junphong, are thanked for their valuable discussion and experience, for sharing hard times together, for giving me hands when I needed and for being my good friends.

I would like to say "vielen dank" to all colleagues at **fmt**, university of Wuppertal, Wuppertal, Germany especially, Dr.Axel Schwabedissen for giving me advices on the vacuum instruments and microwave stuff; Dr.Albrecht Brockhaus for his discussion on plasma diagnostic; Mr.Kasten Brennecker for his nice work on machining vacuum components; Dr.Emilia Finantu Dinu, Mr.Gino Dinu, Mr.Felix Leu, Mr.Torsten Aumann and his wife for their kindly help and hospitality; Mr.Sebastian Kytzia for spending his valuable time to teach and advice me on the simulation part.

This work was supported in parts by The Royal Golden Jubilee scholarship RGJ-3.FCM/41/B2 and the Thailand Research Fund.

The German Academic Exchange Service (DAAD) is acknowledged for the fellowship during my stay in Germany.

ขอกราบขอบพระคุณ คุณพ่อนิธิศน์ คุณแม่ธัญพร เมธิ์สุวกุล สำหรับกำลังใจ ความห่วงใย และคำอวยพร ที่มีให้ลูกตลอดมา ขอขอบคุณกัญหา เมธิ์สุวกุล ภรรยาที่น่ารัก ผู้คอยให้กำลังใจ และให้การสนับสนุนในทุกด้าน ขอขอบคุณน้องมิว เด็กชายญาณกวี เมธิ์สุวกุล ลูกชายสุดที่รัก ที่ทำให้พ่อ ยิ้มได้แม้เวลาที่เหน็ดเหนื่อยที่สุด

Min Medhisuwakul