

## 傑出旅美女性科技人特寫 — 蕭美琛博士 (Dr. Margaret M. Wu)



By Dr. Margaret M. Wu  
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蕭美琛博士是石化工業製程及產品方面的專家。她對合成潤滑劑相關研究上有重大突破，並為其未來的發展奠定了良好的基礎。她最重要的發明之一就是在美國 ExxonMobil 公司所研發出的 Mobil 1 lubricant (潤滑油)。也因為她所發明並成功商業化的新合成潤滑用油，讓她於 2007年 榮獲著名的ACS工業化學獎 (ACS Industrial Chemistry Award)。本文並轉譯蕭博士對於女性科技人如何去追求事業、家庭、和個人興趣間的平衡之看法。

### ❖ 蕭博士的個人資歷

蕭博士於1950年出生在台灣•台北。她在1970年於台北工專取得化工學位，並於1976年於紐約的羅徹斯特大學取得物理有機化學的博士學位。

蕭博士是石化工業製程及產品方面的專家。現在，她是一位資深科技顧問，也是第一位在於紐澤西的Exxon Mobil 科技研究中心獲此殊榮的女性。

蕭博士曾在紐澤西的American Cyanamid Co.做短期的製程化學士，之後於1978年加入了位於 Edison 的 Mobil Chemical 公司的石化部門。在她早期的研究生涯中，她專研於非常態石化製程。她的研究成果發表了許多的專利和期刊。在1982年，因為她在促進科技進步方面的卓越貢獻而獲頒 North Jersey TWIN (工業女性貢獻)獎。

之後蕭博士加入 Mobil and ExxonMobil 研發中心，並在不同領域中皆有亮眼的表現及成就。她在催化物、製程化學和潤滑劑研究上的經驗為之後石油化學業、聚烯烴、合成潤滑劑等研究的重大突破奠定了良好的基礎。她其中一項重要的商業成就就是她所發明的新型合成材料 SuperSyn™ 和並利用此材料製作出 ExxonMobil 最暢

銷的產品之一—Mobil 1 lubricant (潤滑油)。在這項發現之中，她首創利用結合不同領域的化學，合成出擁有優良性質的新分子。蕭博士也是將 SuperSyn™ 成功商品化的過程中主要的參與者之一。這項新型的潤滑油能有效地提供耗損保護、增加效率，讓機械更可靠的運作，並因為可以延長使用油的壽命而減少石油生產量。這些產品對我們的社會形成極為正面的影響，因為其運用可減少廢棄物、降低排放物和保存能源。

因為她的貢獻，她得到了著名的 ExxonMobil 傑出專利商業成就獎(ExxonMobil Outstanding Patent Award for Commercial Success)、ExxonMobil 化學全球科技獎(ExxonMobil Chemical Global Technology Award) 和其他無數內部獎項。2005 年，蕭博士更從紐澤西研發協會得到湯瑪士阿爾瓦愛迪生獎 (Thomas Alva Edison Award)。2007 年蕭博士榮獲著名的 ACS 工業化學獎 (ACS Industrial Chemistry Award)，因為她所發明並成功商業化的新合成潤滑用油，擁有非常良好的性質和極為正向的經濟及環境發展的卓越貢獻，以及她在 ExxonMobil 公司裡所代表的一個科技領導地位。

蕭博士是超過 70 篇美國專利和超過 60 篇外國專利的作者或共同作者。目前蕭博士領導著 ExxonMobil 公司的合成材料研發，而且是公司內各部門的諮詢對象。她因為在合成機油、石化產品、催化劑等方面的專業被大眾認同而被邀請發表期刊和演講。蕭博士也是一個年輕科技人的強力支持者及良師益友，並在工作上大力支持女性科技人。她同時也是柯林頓女性聯合網(Clinton Woman's Interest Network (CLNWIN))成員及擁護者之一。她活躍於許多的專業組織裡，包括美國化學協會(American Chemical Society)、石油化學和高分子科學組 (Petroleum Chemistry and Polymer Science Sections)、中美化學協會 (Chinese American Chemical Society)、機動車工程師和磨擦潤滑工程師協會 (Society of Automotive Engineers and Society of Tribological Lubrication Engineers)。

## ❖ 女科技人如何在事業、家庭、和個人興趣之間取得平衡

在一個保守的石化產業裡做為一個女科技人有其優勢，也有其困難。在這樣的環境下，我必須不斷地證明、說服我的主管和同儕我是多麼認真看待我的工作和成就的。這也代表了我必須付出比男性同儕更多的心力並表現得更好。這幾年，我以我在工作上的努力和我所表現出的能力，以及要把事情做好所展現的決心，證明這並不是件容易的事。然而，換個角度來說，做為一個大公司裡少數幾個女科技人之一的好處是在當我表現優異時，很容易即刻引起主管的注意。於是我充分利用這樣的機會來展現我的能力和傑出的貢獻。這可以幫助我進一步地推展我的事業。但是，我會很小心謹慎，因為我知道這種優勢是兩面刃，會在我表現不如預期時，對我造成強大的殺傷力。也因此，我一直都非常努力的維持一個超乎預期表現的狀態。

在我工作生涯過程中，很重要的一件事就是「持續學習」。在我的工作中，我曾遭遇多方面的困難，像是語言上的溝通障礙、業務上的溝通不易以及新工作內容所要面對的專業問題等等。是因我的持續學習和自我進步，幫助我克服不足的地方，並進一步在事業上得到我應有的報酬、成就。今天，我強力地鼓勵、建議年輕一輩的新人們主動去學習不同領域的事物充實自己。

有許多的年輕新進們曾問我是「如何去選擇一份我所喜愛，同時又有實質回報的專業工作？」我告訴他們：「有時這就像是傳統的相親結婚一樣，雙方先結了婚，之後再去找出雙方的共同點，進而相知相戀。」我剛踏入職場時的第一份工作是在一間石化公司，我盡力去學習這個工作相關的事務及培養良好的人際關係，最後當我工作的得心應手之時，我已愛上這份工作。我希望我的經驗能提供各位找到一份能有所回報的事業之方法。

就我個人來說，如何在家庭、事業、和個人興趣當中取得平衡，取決於如何去決定事情的重要性及如何作選擇。首先，要先決定目前什麼對你來說是最重要的，最想要追求的，你就花較多的時間與精力去追求；而較為次要的，則可以用較少的心力去完成。這並不代表要放棄我的事業或是無視於我的家庭，這只是告訴各位，在不同的時機，有時候家庭比較重要，有時則是工作比較重要，這是要視情況而定的。通常當家庭需要我時，我會放慢我的工作步調，將更多心力用來照顧我的家庭；當工作順利需要衝刺的時候，我會讓家人知道我需要時間和他們的協助來發展我的事業。另外，若有些例行事務，我則會雇人幫忙處理或是不拘泥於不重要的小事。對我來說，事務的優先順序是會隨時間改變的。例如：我剛開始工作的時候，經濟對我來說是很重要的，所以我很努力工作、存錢，並節省不必要的開銷，像是買新衣或是去度假等；當女兒出生之後，她就成了我最重要的事了；等女兒長大之後，我的工作和朋友則成了最優先的事。一路走來，決定事物的重要性和做出抉擇往往是通往快樂、平衡生活重要的一環，我不想同時擁有全部而導致我的生活、事業一團糟，所以我對我不同時期有不同的選擇感到滿意。

最後一句話，決定事物的重要性並作出選擇後並不是非黑即白的答案，要視情況作出最佳選擇，在必要時做適當的調整，這會讓你在各方面更得心應手、更順利。

### **Biographical Sketch of Dr. Margaret M. Wu**

Dr. Wu was born in Taipei, Taiwan in 1950. She received a degree in Chemical Engineering from Taipei Institute of Technology in Taipei, Taiwan in 1970. She received her Ph.D. in Physical Organic Chemistry from the University of Rochester in New York in 1976.

Dr. Wu is a recognized expert in the field of petroleum-based processes and products. Currently, she is a Senior Scientific Advisor, the first woman to achieve this highest technical rank at ExxonMobil Research & Engineering Company, located in New Jersey.

Dr. Wu joined the Petrochemicals Division of Mobil Chemical Company in Edison in 1978 after a short career as process chemist in American Cyanamid Co., NJ. In her early career, she contributed in non-conventional petrochemical processes. Her work led to numerous patents and publications. She was awarded the North Jersey TWIN (Tribute to Woman in Industry) Award in 1982 for her leadership in technology advancement.

Dr. Wu progressed her career in Mobil and ExxonMobil research organizations with many successful assignments in diverse areas. Her experience in catalysis, process chemistry and lubricants laid the foundation for a continuing flow of major contributions in petrochemicals, polyolefins and synthetic lubricants. A major commercial success evolved from her discovery of a new class of synthetic base stock, SuperSyn™, and featured in a breakthrough new Mobil 1 lubricant – one of ExxonMobil's flagship product. In this discovery, she creatively combined the chemistry employed in different areas creating new molecules with superior performance features. Dr. Wu was also a key participant in a team effort to bring SuperSyn™ toward successful commercialization. This new class of fluids used in lubricant contributes significantly to wear protection, improved energy efficiency, more reliable operation and reduced used oil generation by extending oil life. These products make positive impact on our society through reduced waste, lower emission and energy conservation.

For her contribution, she was the recipient of the prestigious ExxonMobil Outstanding Patent Award for Commercial Success, the ExxonMobil Chemical Global Technology Award and numerous other internal awards. In 2005, Dr. Wu was awarded Thomas Alva Edison Award by New Jersey R&D Council. In 2007, Dr. Wu was awarded the prestigious ACS Industrial Chemistry Award “for her discovery and successful commercialization of new synthetic fluids with step-out performances and positive economical and environmental impact; and for her technical leadership role in ExxonMobil organizations.”

Dr. Wu is the author or co-author of more than 70 issued US patents and 60 foreign patents. Currently, Dr. Wu heads ExxonMobil's synthetic base stock development effort and is widely consulted by many business groups within the company. Her expertise in synthetic fluids, petrochemicals and catalysis is recognized outside the company and was invited to write papers and presentations in these areas. Dr. Wu is also a strong supporter and mentor for younger technical staff and has a solid record for supporting woman scientists at work. She is a founding member and champion of the Clinton Woman's Interest Network (CLNWIN) promoting woman . She is active in many professional organizations, including American Chemical Society, Petroleum Chemistry and Polymer Science sections, Chinese American Chemical Society, Society of Automotive Engineers and Society of Tribological Lubrication Engineers.

### **Comments about Balancing Career, Family and Personal Needs for Woman Scientists**

Being a woman scientist in a conservative petroleum industry has disadvantage and advantage. The disadvantage lies in having to convince managers or colleagues constantly that I am seriously about my career and accomplishments. This meant doing

more and better than male colleagues. Over the years, I did it by working hard, by showing others that I have the capability and the determination to do well, etc. It was hard work. The advantage for being one of the few woman scientists in a large company is that I attract management attention when I do something outstanding. I take this advantage to show off my capability and the outstanding contribution I made. It helps to advance my career. However, I am always very conscientious that this advantage can quickly turn into a career-killer if I do something below expectation. So, I strive to be consistent for exceeding-expectation all the time.

One activity that is most crucial for my career advancement is “continuous learning”. In my career, I have encountered problems with English, with business communication, with many technical subjects in new assignments, etc. Continuous learning and self-improvement help me to overcome these deficits and achieve a rewarding career. Today, I strongly encourage young colleagues to actively engage in continuous learning in diverse subjects.

Many young colleagues asked me how to choose a rewarding profession that I love. I told them, sometimes, it is like a pre-arranged Chinese marriage in which the two sides marry first and then find common grounds to fall in love. I was offered a job in a petroleum company. I did my best to learn the business, the people and eventually fell in love with the work when I became good at it. I hope my experience provides one option to a rewarding career.

Personally, balancing career, family and personal interest is all about “setting priority and making choice”. One has to decide what is important to pursue and what is less important for low gear. This does not mean I drop my career or ignore my family. It only means sometimes, family is more important, sometimes career is more important, depending on situation. Usually, when family needs arise, I slow down my work and put more effort to care for family. When work is going well, I let family know that I need time and help to advance my career. As for many daily routines, I look for hired help or let go if they are not critical. My priorities and choices changed over time. When I first started to work, financial security was important. So, I worked hard, saved and skipped any extras (like good cloths and vacations, etc). After my daughter was born, she was the high priority. After she grew up, my work and friends became a high priority. All along the way, setting priorities and making choices are crucial to a happy balance. I do not try to have it all and I am happy with this choice.

A final word, “setting priority and make choice” is not a black-or-white answer. Often, we make the best decision, move on and make adjustment if necessary.