

日本金属学会九州支部・日本鉄鋼協会九州支部

# 第 256 回材料科学談話会のお知らせ

平成22年6月9日

Technion, Israel Institute of Technology の David Brandon 先生をお招きして下記の通り講演会を開催いたします。Brandon 先生は結晶粒界の対応格子理論の確立に貢献された粒界研究のパイオニアの一人です。最近の EBSD/OIM を用いた粒界解析に係わっていらっしゃる方は、"Brandon 条件"には解析の度にお世話になっておられるかと思えます。今回のご講演では、粒界に関する硬いお話ではなく、先生がケンブリッジ大学にて出会われた材料科学の巨人たちについて、特に若い人へのメッセージをこめてお話しいただくことになっております。皆様、奮ってご参加下さい。

講 師 : **David Brandon** 名誉教授

(Faculty of Materials Engineering, Technion, Israel Institute of Technology)

講演題目 : **Meeting great men: Cambridge, 1955-1965**

日 時 : 平成22年7月5日(月) 16時10分~17時30分

会 場 : 熊本大学工学部百周年記念館

要 旨 : 別紙参照

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談話会についてのお問い合わせは、下記の連絡先をお願いいたします。

交通手段の詳細については、下記のホームページをご覧ください。

熊本大学黒髪キャンパスへの交通手段

→ <http://jugon.eng.kumamoto-u.ac.jp/faculty/faculty08.html>

黒髪キャンパス(黒髪南地区)の地図

→ <http://www.eng.kumamoto-u.ac.jp/faculty/faculty07.html>

材料科学談話会世話人 : 中島 英治

連絡先 : 連川貞弘(熊本大学大学院自然科学研究科 複合新領域科学専攻)

Tel & Fax: 096-342-3720

E-mail: [tureka@kumamoto-u.ac.jp](mailto:tureka@kumamoto-u.ac.jp)

# Meeting great men

## *Cambridge, 1955-1965*

David Brandon  
*Faculty of Materials Engineering*  
*Technion, Israel Institute of Technology*  
*Haifa 32000, Israel*

### **Abstract**

For this young metallurgist, the decade 1955-1965 was life-changing. The decade began with the development of thin-film electron microscopy and the quantitative analysis of diffraction contrast from crystal lattice defects. The pioneers were Peter Hirsch and his research group in the Cavendish Laboratory, but the Metallurgy Department had developed replicas for the electron microscopy of ferrous and non-ferrous alloys and I was one of their research students. Gareth Thomas held a post-doctoral appointment and the group, led by Jack Nutting, included Robin Nicholson, Pat Kelly and Peter Swann. We adapted the electro-polishing method to prepare thin-film samples from a wide range of aluminum alloys, steels and copper alloys.

By mid-decade, Mike Ashby and I had been awarded British Council Scholarships to visit Germany, where we met with Alfred Seeger, Peter Haasen and others. A continuous stream of distinguished visitors came to Cambridge: John Cahn, Jock Eshelby, Jacques Friedel and Charles Frank, all gave lectures and spent hours talking to research students, showing endless patience for our many scientific misconceptions. In 1958, Erwin Müller, then at Penn State University, presented his extraordinary, atomically-resolved, field-ion microscope (FIM) images of refractory metal needles. This was also a decade of nuclear-power reactor development, so understanding radiation damage was a major priority. I was completing my thesis, on 'Dislocation reactions in  $\alpha$ -iron', when Alan Cottrell, now the Goldsmiths' Professor of Metallurgy, asked me to explore the potential of FIM for studying lattice defects and radiation damage.

In 1962 Charles Frank and Alan Cottrell recommended me for a Royal Society Award to attend an international conference in Kyoto on 'Crystal Lattice Defects'. We presented our first FIM results on atomically-resolved dislocation and grain-boundary structures. By this time the Cambridge FIM group, led by Jack Nutting, included Piers Bowden, Mike Southon, Srinivasa Ranganathan, Mike Wald and Brian Ralph. At the annual Field Emission Symposium (FES) in 1963 I was asked to organize the next symposium in Cambridge, but I had already decided to accept an appointment to work with Walter Bollmann at the Battelle Memorial Institute in Geneva. It was finally decided that I would chair the 11<sup>th</sup> FES in Cambridge, but that Mike Southon would act as co-chairman. By the time the decade came to a close, I had been given every opportunity to meet leading scientists from around the world, primarily in Cambridge but also in the United States, Europe and Japan. 'Name-dropping' is irresistible: Cyril Smith, H. Hashimoto, John Hilliard, Yoichi Ishida, Robert Gomer and many others.

Being in Cambridge at the birth of thin-film electron microscopy was a privilege, but being given the opportunity to image coincident site boundaries in the field-ion microscope was extraordinary luck. None of it could have happened without the guidance provided by a remarkable galaxy of memorable scientists.