

## Gerald R. Van Hecke 教授

(2001年3月22日～7月12日滞在)

ヴァン・ヘッケ教授はカリフォルニア州クレアモントにあるハーヴェイ・マッド・カレッジに勤務されている方で、今回が当センター3度目の長期滞在になる。最初の2回は自己資金での来日であったが、今回は客員教授として大阪大学が招待した。二成分系の熱力学を得意とされるが、中でも液晶を好んで研究対象にされている。1回目の滞在時には当時まだ珍しかった円盤状化合物が示す特異なディスコティック液晶の熱容量測定をされ、2回目はこれまた珍しいリエントラント液晶の熱測定をされた。3度目の今回は、金属錯体液晶いわゆるメタロメソジェンになるステアリン酸コバルトの熱容量測定をされた。いずれの場合も自分の研究室で合成された試料を持参された。

大学院の講義「分子熱力学」を一度担当していただいたが、用意周到なプリントとパワーポイントによる映像を併用し、二成分系の相図に関する実に明快な講義をされた。聴講学生から質問は出なかったが、米国とは異なる教室の雰囲気をおおいに楽しまれた。化学教室でのセミナー講演 “Use of laser light to measure thermodynamic excess properties from Gibbs energies to piezo-optic coefficients” は、ご自身の考案によるレーザーを利用した過剰熱力学量の決定法で、興味深いものであった。7月4日の米国独立記念日には、教官・学生へのお礼にとセンターの屋上でヴァン・ヘッケ教授主催のバーベキューパーティが行われた。写真は恒例の研究室ハイキングで北摂の山を歩いた時のものである。

(徂徠道夫)



30 September 2001

For the 22<sup>nd</sup> Annual Report: Impressions of the Research Center for Molecular Thermodynamics

During the period from the end of March to mid July 2001, I was privileged to visit once again the laboratory in Osaka University Graduate School of Science now known as the Research Center for Molecular Thermodynamics as a Visiting Professor. The study of how molecular entities or systems utilize the energy available to them through the measurement of heat capacity is perhaps the most fundamental physical property possible to study. The Research Center is a world class facility for the measurement of heat capacity and I was most pleased to again visit and conduct research with the highly knowledgeable and skilled professionals and students of the Center.

My research involved the measurement of the heat capacity of the metallomesogen cobalt stearate. With the colleagues in the laboratory we successfully measured the heat capacity and determined the thermodynamic functions of enthalpy and entropy from 15 to 400 K. These measurements represent the first high resolution adiabatic calorimetric study of a metallomesogen and the results are in preparation for publication. Moreover during my stay, it was possible for me to participate in the 7<sup>th</sup> International Symposium on Metallomesogens that was held in the Tateshina Highlights, Chino, Japan and present the results of our measurements as a poster.

During other visits outside of the Center I was able to share good scientific discussions on our work in the Center that included seminars presented at The Advanced Institute of Science and Technology, Shinshu University, and Hokkaido University. In addition I was pleased to be able to present a seminar to the Research Center staff and other invited members on my work involving the measurement of excess functions of binary mixtures of simple liquids.

One of my pleasant duties as Visiting Professor was to teach a class in the Advanced Physical Chemistry course. It was very interesting to contrast teaching presentations in Japan with typical presentations in the United States.

Of course the focus of my visit was research, the measurement of heat capacity of cobalt stearate. The Center's facilities are very well organized to make significant measurements quickly. I have observed over the years my visits to the Center an improvement of the equipment which always is on the cutting edge. The students who align themselves with the Center receive excellent training not only in the details of their measurements but in the general conduct of science. For this training the staff of the Center must be highly commended. Clearly the Center is well equipped and staffed to continue making significant contributions to the better understanding of molecular thermodynamics

whether the studies be of traditional organic materials, newer inorganic materials, or biologically based materials.

All work and no play is said to make for dull fellows. I was pleased to participate in the annual group hike and to host a special 4<sup>th</sup> of July picnic for the laboratory. Both events allowed me to further interactions with the students of the Center to our mutual benefit. I note that the new seminar room in the Center's facility will foster increasing fellowship and scientific communication among the students and staff of the Center.

I must thank many people for efforts on my behalf but some especially. Thanks to Associate Professor Kazuya Saito for his generous help in using the Pyris DSC. To Assistant Professor Yatsuhisa Nagano go thanks for his help on the DSC 7 as well as his computer expertise to set up my computer. The tireless and skillful efforts of Dr. Tadhiro Nakamoto in making the cobalt stearate heat capacity measurements must be acknowledged and appreciated. It is hard to express enough thanks to my long time colleague Professor Michio Sorai, first for his invitation to be a Visiting Professor, all of his untiring work behind scenes to make my visit so productive, and the wonderful scientific discussions. His generous hospitality and friendship both inside and outside of the laboratory setting are recognized and treasured. May all members of the Research Center, students and staff, enjoy in their endeavors continued success and recognition.

With Best Wishes,



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