粒子・流体プロセス部会

平成 23 年度　部会セミナー
参 加 募 集

主催：化学工学会　粒子・流体プロセス部会

粒子・流体プロセス部会の主催行事である部会セミナーを，下記要領で開催いたします。本年度より開催形態を見直し，部会員の皆様は参加費を無料といたしました。ぜひともご参加下さいますようご案内いたします。また，本セミナーは，部会会員の方だけでなく（参加費有料となりますが）会員外の方のご参加も歓迎いたします。

なお，資料準備の都合上，下記にて参加申込をいただけますようお願いいたします。

記

○日時：　平成 23 年　3月21日（月）　13：15～15：30

○場所：　東京農工大学　小金井キャンパス　（化学工学会　第 76 年会会場）
講義棟　Ｌ００１１教室
〒184-8588 東京都小金井市中町 2-24-16

○プログラム：

13：15～14：15
講演１　「流動化の科学，その歴史的展開と未来」
龍谷大学(政策学部)・JST(社会技術研究開発センター) 堀尾　正靱　教授

14：30～15：30
講演２　「Extensional Rheology of Polymer Melts」
Technical Univ. Denmark　Ole Hassager　教授

○参加費：

粒子・流体部会会員	無料
粒子・流体部会会員外	3,０００円
学生	無料

※会員外の方の参加費は当日会場受付にて徴収いたします。

○参加申込方法：

ご氏名，ご所属，参加区分（部会会員，会員外，学生）を
平成２３年3月１１日（金）までに
E-mail にて事務局にお送りください。

事務局：　粉体プロセス分科会　事務局（担当：後藤　邦彰）
岡山大学大学院自然科学研究科機能分子化学専攻
〒700-8530　岡山市北区津島中 3-1-1
E-mail　　gotoh @cc.okayama-u.ac.jp

注）部会セミナー終了後、部会総会（15:45-17:00）を同じ会場にて開催いたします。

― 講 演 概 要 ―

“Fluidization science, its development and future”

Masayuki Horio
Department of Politics, Ryukoku University, RISTEX, Japan Science and Technology Agency,
Kojimachi Square 5F, 3 Niban-cho, Chiyoda-ku, Tokyo 102-0084, Japan

The three stage theory for the progress of science proposed by Taketani in 1942 is an effective tool for scientists to analyze historical development processes of scientific fields and plan his or her research projects. The Taketani theory and its meaning are discussed in the first part of this lecture and applied to analyze the footmarks of fluidization research. First the history research from 1940s to 1970s is analyzed. Then discussed is how the author planned his research for the period from 1970s to 2000s, i.e., the second cycle, based on the three step assumption when he fully joined fluidization research at around 1976. The real research took place pretty adventurous manner with the new foci on circulating fluidized beds and agglomerating fluidization as well as many industrial applications including coal combustion, polymerization, CVD, pharmaceutical applications and waste management. The second cycle was closed at the turn of the century confirming the three stage law, establishing a general understanding of suspension structures over its full range from bubbling, fast fluidizations to pneumatic transport; and also establishing powerful measurement and numerical simulation tools.

Discussion is then extended to the interactions between fluidization technology and science and to that between fluidization technology and society. This is important to project the future potential of fluidization, the task of the third cycle, if it exists. In relation to the green reforming of the present technology also to the development of links to different scientific fields there seem to exist a definite new field and a period of enthusiasm in fluidization which is worth to join. To encourage a new challenge a generalized definition of ‘fluidization’ is proposed to extend fluidization principle into much wider scientific fields.

1942年に物理学者武谷三男が提唱した科学の発展様式についての「三段階論」(「三段論法」ではないのでご注意を！)が流動層研究のこの30年の展開にいかに役に立ったか、ではこれからはどう考えたらいいかを議論する。

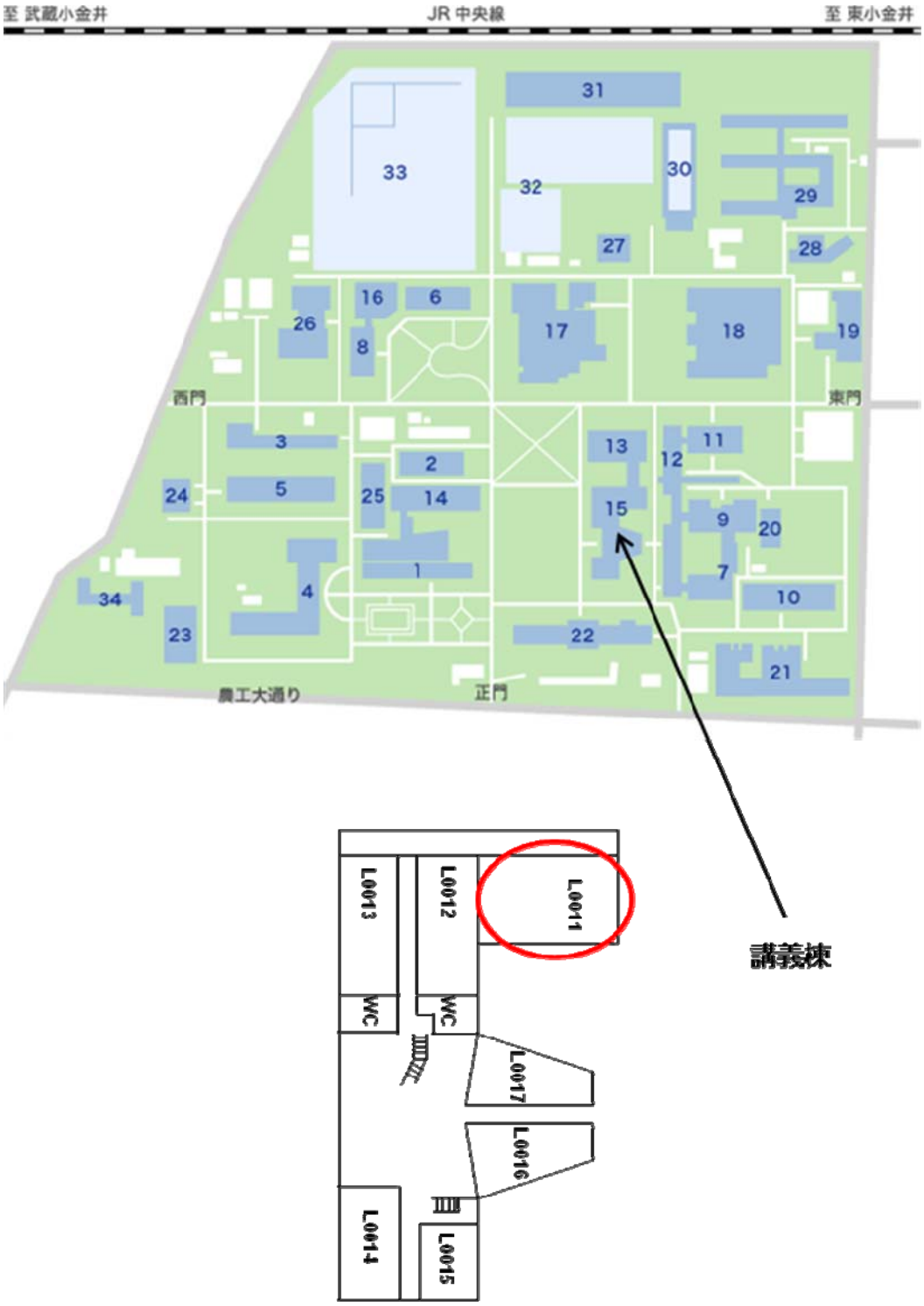
“Extensional Rheology of Polymer Melts”

Ole Hassager
Danish Polymer Center, Department of Chemical and Biochemical Engineering,
Technical University of Denmark, DK2800 Lyngby, DENMARK

The non-linear dynamics and rheology of entangled polymer melts has been an area of immense activity in the past 25 years. The activities are driven both by scientific and industrial interest. The ultimate goal of the activities is to understand the connection between molecular architecture and rheological properties, i.e. to master the field of molecular rheology. Until recently most of the activities have been devoted to shear rheology rather than to extensional rheology. This is not because extensional rheology is less important than shear rheology, but primarily because it has proven to be very difficult to produce well defined extensional flows of polymer melts.

In this talk it will be demonstrated how the Filament Stretchning Rheometer (FSR) may be used to produce reliable data of the nonlinear extensional rheology of several well defined model polymers. Extensional flows are much more efficient than shear flows at orienting and stretching flexible polymers. In this way extensional flows provide a very strong way of probing the non-linear dynamics of flexible polymers. Hence polymer melts tend to show strain hardening in extensional flow, a property utilized in fiber production. Rheological measurements will be shown both for model linear polymers systems and model branched polymer systems of known architecture. It will be demonstrated that the FSR is capable of producing real time measurements of stress in well defined up-start, stress relaxation and recovery flow fields. Results for the resulting extensional stresses will be compared with available model predictions. Finally the FSR technique will be compared with available commercial instrumentation for extensional rheology.

ー会場案内図ー


至 武蔵小金井
JR 中央線
至 東小金井
31
33
32
30
29
27
28
16
6
26
8
17
18
19
西門
東門
3
2
13
12
11
24
5
25
14
15
9
20
1
7
34
4
10
23
22
21
農工大通り
正門
L0013
L0012
L0011
WC
WC
L0017
L0016
L0014
L0015
講義棟