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FINAL REPORT

ICS – UNIDO – NCL Workshop

on

Clean Catalytic Processes

for

Fine Chemicals and pharmaceuticals

at

National Chemical Laboratory, Pune, INDIA

7 – 10 February, 2000

UNIDO PROJECT NO. : TF/GLO/96/105

CONTRACT NO. : 99/298/IR

Objectives:

The main objectives of this workshop were as follows:

- To build awareness among experts from industry, R & D institutions and universities working in the field of catalysis and process development for fine chemicals and pharmaceuticals and about the recent development in clean catalytic technologies in this field.
- To identify the current problem of chemical industry with respect to polluting processes and emphasis for developing cleaner alternatives.
- To identify the R & D institutions and industries engaged in the development of technologies for fine chemicals and pharmaceuticals and establish a workforce to develop a strategy for transfer of technologies in India and neighboring countries through these institutions and ICS network.

Organization:

The workshop was organized jointly by the International Centre for Science and High Technology (ICS), United Nations Industrial Development Organization and National Chemical Laboratory Pune, INDIA.

The local Organizing Committee consisted of Dr. R. V. Chaudhari as the Chairman, Dr. A.V.Ramaswamy, Dr. A. A. Kelkar, Dr. G. S. Grover, Dr. B. M. Bhanage and Dr. C. V. Rode

Dates and Venue:

The Workshop was held during 7 – 10 February, 2000 at National Chemical Laboratory Pune, INDIA.

Funding:

The expenditure sanctioned by UNIDO for this project was US \$ 30,000/-. The amount received from UNIDO on 27th January, 2000 was US \$ 23970/- (US \$ 30/- deducted by Bank as Bank Charges) to cover the expenses towards the items listed in the budget. The hosting country (India) contributed US\$ 5,500/- towards various items. In most cases pre-paid tickets were sent to the international participants. Efforts were also made to make arrangements for meals etc. with reasonable costs and quality. A summary of the final budget is given in **Appendix I**.

Participation:

In this workshop 70 participants were present which involved 15 keynote speakers and 55 participants including ten reporters for presenting their country reports.

1- Lecturers (keynote speakers)

The lecturers from different countries were present as per the details given in Table 1 and Appendix-II. All the participants were provided with lectures notes of during the workshop the key topics covered were applications of catalysis for fine chemicals and pharmaceuticals, asymmetric catalysis, oxidation catalysts, homogeneous catalysts, hydrogenation, modeling, reactor design and process engineering. In all 27 lectures and ten country reports were presented.

2 - Participants

Several forms and invitation letters were distributed to most of the academic institutions and industrial companies in the region and neighboring countries.

55 participants (Table -2) from 9 countries, regularly attended the workshop making the total number as 70 including lecturers and participants, representing 12 countries. Participants' affiliations included universities (60 %) and R & D centers and industry (40 %).

Table - 1. Keynote Lecturers* of the Workshop

No	Lecturer	Institution	Country
1	Prof. J. Margitfalvi	Institute of Chemistry, Chemical Research Center, Hungarian Academy of Sciences.	Hungary
2	Prof. M. M. Sharma	University Department of Chemical Technology	India
3	Dr. G. D. Yadav	University Department of Chemical Technology	India
4	Dr. K. V. Raghavan	Indian Institute of Chemical Technology	India
5	Dr. B. N. Roy	Lupin Laboratories Limited	India
6	Dr. R. V. Chaudhari	National Chemical Laboratory	India
7	Dr. V. R. Chaudhari	National Chemical Laboratory	India
8	Dr. M. K. Gurjar	National Chemical Laboratory	India
9	Dr. A. V. Ramaswamy	National Chemical Laboratory	India
10	Dr. C. V. Rode	National Chemical Laboratory	India
11	Dr. A. A. Kelkar	National Chemical Laboratory	India
12	Prof. S. Miertus	Pure and Applied Chemistry, ICS-UNIDO	Italy
13	Prof. F. Trifiro	Universita degli Study de Bolonga	Italy
14	Dr. M. Ricci	ENICHEM - Centro Ricerche Novara "Istituto guido Donegani"	Italy
15	Dr. M. Garland	The National University of Singapore	Singapore

Table - 2. Participants according to countries

Sr. No.	Country	No of Participants
1	Bangladesh	1
2	India	46
3	Indonesia	1
4	Malaysia	1
5	Philippines	1
6	South Korea	1
7	Sri Lanka	2
8	Thailand	1
9	Taiwan	1

The complete list of participants is attached (**Appendix – III**)

Workshop Materials:

Each participant and lecturer was provided with a small bag containing the workshop package. The main workshop materials included the following :

- Lecture notes (426 pages)
- General Program
- List of all participants with their addresses
- Pen and Notebook
- Identification badge

Opening Ceremony:

The Opening Ceremony of the workshop was organized at the Auditorium of National Chemical Laboratory. The function was presided over by Dr. Paul Ratnasamy, Director, N.C.L., with Chief Guest **Dr. R. A. Mashelkar**, Director General, Council of Scientific & Industrial Research. Dr. Mashelkar gave his address to the participants highlighting the increasing importance of Clean Catalytic Processes and CSIR's commitments to such a programme. Prof. M. M. Sharma, Former Director, BUDCT, Mumbai presented a keynote lecture on “Catalysis and Process Engineering for Synthesis of Fine Chemicals”.

Program:

The workshop program is presented in **Appendix II**

Social Events:

Evening dinners were organized twice at NCL Guest House and once at Hotel Garden Court.

Assessment:

Assessment of the workshop was performed by an optional questionnaire distributed to participants. A summary of this assessment is given in **Table – 3**. According to the result of this assessment the workshop was very successful and the organization was excellent, most evaluations have been from very good to excellent.

All participants would recommend others to attend a similar activity.

Table - 3. Summary of the Questionnaire:

ITEM	Excellent (%)	Very Good (%)	Good (%)	Fair (%)	Poor (%)
Announcement	42	36	19	3	
Scientific Program	53	44	3		
Hotel	69	17	14		
Transportation	69	17	14		
Social Activities	---	---	---		
Didactical Material	47	39	14		
Invited Speakers	42	53	5		
Organization	81	19	---		

Possible Follow-up:

Contributions of key lecturers and country reports (distributed during the workshop as photocopies of the presented transparencies) will be finalized in the form of fully written papers and will be published as a book of proceedings

Dr. Chaudhari (as a representative of India) will coordinate the works on the establishment of an informal network on catalysis and cleaner technologies in South East Asia on which the data provided by the participants in the workshop will be summarized.

Appendix -I

Summary of the Final Budget

A - UNIDO CONTRIBUTION		
Description	Amount in US Dollar as estimated in TOR	Actual expenses (US Dollars)
Accommodation and meals of 4 invited international lecturers	900	1687
Accommodation of and meals of 9 international participants	1950	783
Accommodation and meals of 10 lecturers from the country	900	580
Accommodation and meals of participants from the country	2250	2726
Travel of 4 invited international lecturers	9300	5396
Travel of 9 invited international participants	13000	8553
Travel of 4 invited national lecturers	600	709
Travel of participants from the country	450	500
Transport during workshop	650	331
Total TOR (Estimated)	30000	
Total Amount Received from UNIDO	23970	
Total Expenses during the workshop		21265

B - CONTRIBUTION OF THE HOSTING COUNTRY (INDIA)	US \$ 5500/-
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Closing Ceremony :

In concluding session, country reports were presented by several participants as per details given in the programme. **Prof. Miertus, Prof. Trifiro and Dr. R. V. Chaudhari** expressed their views on the workshop proceedings and highlighting the important role of catalysts in clean chemical processes.