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# **Final Report**

**Workshop**

**on**

**“Combinatorial Chemistry & Molecular  
Design Methods:  
recent Developments and Applications”**

**Cocoyoc (Morelos), Mexico**

**4-5 December 2006**

**UNIDO Project TE/GLO/04/105**

**UNIDO Contract Order No.: 16001307 ML/CZ**

## INTRODUCTION

The Workshop on “*Combinatorial Chemistry & Molecular Design Methods: recent Developments and Applications*” was held in Cocoyoc, Morelos State, Mexico, which was organized jointly by ICS-UNIDO – the International Center for Science and High Technology of the United Nations Industrial Development from Trieste, in collaboration with the Mexican Petroleum Institute (IMP).

In a previous Expert Group Meeting on “*Networking and Development of Project Initiatives in CC/CT/MD Programmes*”, held in Trieste on Dec 12-13<sup>th</sup>, 2005, the group highlighted problems and issues in the Central/Latin America region that should be addressed, among them,

- The possible establishment in Mexico of a Regional Training Centre in CC/CT/MD-assisted materials research for Central/Latin America countries, based upon the research facilities of the IMP at Mexico City, as a part of the ongoing Project Proposal, which was submitted by Mexico to ICS-UNIDO.
- The proposition of Mexico to become a focal point for CC/CT/MD assisted research in the Latin American region.
- The recommendation to hold in Mexico a workshop in 2006, which could invite local and regional decision makers and experts aiming, among other goals, to define objectives, partners and activities for a Regional Network on CC/CT/MD-assisted materials research.
- The interest of other Latin American countries, either present at the EGM or via reported feedback, who have expressed their interest in being involved in a Workshop aiming, among other goals to become a part of a Regional Network on CC/CT/MD-assisted materials research.

Although HTS & CC/CT/MD have been applied intensively in the pharmaceuticals field, these methods are being applied only recently to materials development, in particular to catalysts and polymers. However, staying aside of this trend may contribute further to widening the technological gap in developing and emergent countries. For this reason, it is necessary the assistance of ICS-UNIDO to coordinate, design, promote and facilitate together with local and regional experts, the building up of a regional capacity in terms of infrastructure and human resources. Also, ICS-UNIDO may contribute further in coordinating the implementation of Decision Support Tools and to search for financial funding both in the regional and international organizations. Further assistance will be needed from ICS-UNIDO for setting up and implementing a training program inserted in this Project Proposal.

In this context the organization of a joint regional meeting in Mexico was proposed, which could allow the exchange of viewpoints of the subject among the different actors from Academy, R&D Centers, Government Agencies and Industry, from the Latin American region.

Mexico was one of the first countries to install a Combinatorial Catalysis facility at IMP by the year 2000, with two high-throughput robots dedicated to the synthesis and evaluation of new catalysts, which allowed the strengthening of R&D capacities at IMP. Also, other facilities for polymers synthesis and properties studies were incorporated by 2003 in the CID- Centro de Investigación y Desarrollo- from the DESC group.

On these basis a proposal was presented to ICS-UNIDO for establishing a regional facility in the field of Combinatorial Chemistry dedicated mainly, but non exclusively, to R&D on catalysts and polymers.

Therefore, the main objectives of the Workshop held at Cocoyoc (Morelos) in Mexico were the following:

- Methods for new materials development.
- Discussion of the possible mechanisms for setting-up a regional collaboration with the support of local institutions in the area of Science and Technology and with the coordination of ICS-UNIDO.

These issues follow previous discussions held into the ICS-UNIDO framework on the possible set up of a regional facility in Mexico, which considered several stages of development, for example:

- Building up the technical and scientific capacities by means of training on CT/CC/MD and Molecular Design (MD) applied to R&D of new catalysts and polymers.
- Building up and reinforcing the infrastructure of CT/CC/MD for studying and developing materials for a variety of potential applications, as well as approaching several industrial branches such as the oil refining and petrochemistry, polymer commodities and specialties, automotive, metallurgy, etc, which need the timely incorporation of new materials for a variety of applications.
- Extending the facilities to Central and South America on a regional perspective and promoting the scientific collaboration with other institutions worldwide. Executing Regional Pilot Projects.

Thus, the main issue of the present workshop was putting together a partners program in terms of Consortium, main interests, possible funding, cooperation, training and networking around the central subject of CT/CC/MD for new materials in the Latin American region.

In order to guarantee a full exchange of ideas representatives of several areas were invited, for example the local Government authorities from the Science and Technology Agency (Conacyt), distinguished professors from local and foreign academic institutions, managers from Industry, product executives and scientific researchers from R&D Centers.

The general topics of the Workshop included

- Tutorial conferences
- Technical Talks
- Country Reports
- Diffusion of ICS-UNIDO Programs
- Diffusion of CONACYT Programs
- Diffusion of IMP Programs.

### **Local Organizers**

The local institution supporting the organization of the Workshop was the Mexican Petroleum Institute (IMP), a National R&D Centre for oil & gas related science and technology issues, which supports the technology of the state-owned oil industry in Mexico. It is a Public Center of Research & Development from the Federal Government and it is devoted to R&D activities related to transforming basic knowledge to industrial applications in the areas of oil and gas, mainly. The number of employees at IMP is about 4,000, distributed among the production centers of the country's oil industry. IMP has facilities and infrastructure needed for geochemical and physical analysis, as well as laboratories for synthesis and materials characterization; typical materials investigated include catalysts, polymeric membranes, ceramic devices, gas sensors and adsorbents, metals, etc; also, IMP offers monitoring services "in-situ", for environmental assessment in the production oil fields and refineries. The field of Basic Engineering and Plants Design is another area of importance. Recently a new Electron Microscopy Unit was inaugurated at IMP on Nov 2006, which comprises several top-notch instruments (Titan 80-300, Jeol 2200 FS, FE-30, etc). Also, a combinatorial facility was installed during the year 2000, which includes both synthesis and evaluation robots for catalysts development. Also, IMP offers a Postgraduate Program, with about 150 students who are taking courses and doing research work in view of obtaining their Master and PhD degrees. The first generation will be coming out by 2007. Current projects deal with specific technical services and with more widely encompassed research topics, all of which have an impact on the oil and gas industries. Some examples are the following: 1) process and catalysts development for refining, (2) chemical products for corrosion control, (3) drilling and exploration, (4) Process design, etc.

The Workshop was held in a small Hotel-Resort close by of Cocoyoc, a small town at about 25 Km from Cuernavaca (Closest medium-size city at about 60 Km south Mexico City). The Hotel is in the countryside and has facilities: Restaurant, Conference rooms, etc. The transport from the Airport at Mexico City to the site (Cocoyoc) was provided according to the flights scheduled and no incident was reported on these activities.

The person responsible for the organization of the Workshop was:

Dr. Jose-Manuel Domínguez  
R&D Executive at IMP,  
Phone: +52 55 9175 8392,  
e-Mail: [jmdoming@imp.mx](mailto:jmdoming@imp.mx)

## **PARTICIPATION**

In total 18 participants over 28 invited were able to reach the site during 4-5 December. Also, 4 Latin American countries over 5 invited were represented, the exception being Venezuela, due to the coincidence with their national election day (3 Dec). The Workshop was honored by representatives from the Academy (Cinvestav, UAP), Government Science & Technology Agency (Conacyt), R&D Centres (IMP, CID) and industry (Idesa).

### **Lectures :**

4 Tutorials,

4 Technical talks,

5 presentations on *Program initiatives (ICS-UNIDO, Conacyt)*

4 country reports (Argentina, Brazil, Chile, Mexico)

#### **• Main Topics:**

- **INTERNATIONAL INITIATIVES AND OPPORTUNITIES:**

- *Programs and Projects Management (IMP)*

- Conacyt (Mexican National Agency for Science & Technology): Current Programs for Advanced Science & Technology

- Decision Support Tools for Combi/HT technologies: ICS-UNIDO experiences and I initiatives in the field: *(ICS-UNIDO)*

- **TRENDS IN TECHNOLOGIES FOR COMBINATORIAL/HIGH THROUGHPUT METHODS:**

#### **a. Tutorials**

- Applying high throughput experimentation to some key challenges in oil and gas Chemistry

- Homogeneous & Heterogeneous Polymerization of Olefins by Combinatorial/HT Methods.

- Theoretical Methods: *Modeling of acidity in Zeolites*

- Paradigm Challenges by Molecular Design: Planar tetrahedral carbons and Open Heteroleptic "sándwich" compounds.

#### **b. Technical Talks**

- Mathematical algorithms for experimental Planning&Design

- Assessment of hydrocarbon adsorption constants under reaction conditions and conversion of residual hydrocarbon feedstocks"

- Paraffins isomerization by Combinatorial/HT Methods

- Development of New Materials based on Polyolefins: From Catalysts to Nanocomposites

- COUNTRY REPORTS (Argentina, Brazil, Chile, Mexico)

## LIST OF PARTICIPANTS

FINAL LIST OF PARTICIPANTS

Workshop "Combinatorial Chemistry and Molecular Design Methods: Recent Developments and Applications"			
AREA	SPEAKERS	INSTITUTION	E-mail
R&D	1. CLAUDE MIRODATOS (IRC/France)	Institut de Recherches sur la Catalyse, Lyon, France	clau.mirodatos@catalyse.cnrs.fr
R&D	2. CLAUDIO MOTA (UFPA/Brazil)	University of Rio de Janeiro	cmota@q.uff.br
R&D	3. ULISES SEDRAN (USF/Argentina)	University of Santa Fe	usedran@ffq.usn.edu.ar
R&D	4. RAUL QUIJADA (UC/Chile)	University of Chile	raquijad@ing.uchile.cl
R&D	5. FRANCISCO GRACIA (UC/Chile)	University of Chile	fgracia@ing.uchile.cl
TECHNOLOGY	6. JAVIER REVILLA (CID/DESC)	I&D Center/DESC Group	jrevilla@mail.glrsa.com.mx
R&D/TECHNOLOGY	7. JOSE MANUEL DOMINGUEZ (IMP)	Mexican Petroleum Institute	jmdoming@imp.mx
R&D/MANAGEMENT	8. LEONARDO RIOS (IMP)*	Mexican Petroleum Institute	lriosq@imp.mx
MANAGEMENT/GOV	9. JOSE MANUEL RIVAS (CONACYT)	Conacyt	mrivas@conacyt.mx
MANAGEMENT/GOV	10. ALEJANDRA ZARCO (CONACYT)	Conacyt	azarco@conacyt.mx
R&D/STUDENT	11. TOMAS BELTRAN (IMP)	Mexican Petroleum Institute	tbeltran@imp.mx
R&D	12. ASCENCION MONTOYA (IMP)	Mexican Petroleum Institute	amontoya@imp.mx
ACADEMY	13. GISELDA CORRO (UAP)	University of Puebla	cs001380@sku.buap.mx
R&D	14. RAFAEL MARTINEZ PALOU (IMP)	Mexican Petroleum Institute	rpalou@imp.mx
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R&D/ACADEMY	16. ROBERTO ZAZUETA (UG)	University of Guanajuato	zazueta@guajto.ugto.mx
R&D/ACADEMY	17. ALBERTO VELA (CINVESTAV)	Cinvestav	avela@cinvestav.mx
R&D/STUDENT	18. PATRICIO MORALES	Mexican Petroleum Institute	pmpacec@imp.mx
R&D/INDUSTRY	19. PIERFAUSTO SENECL*	ICS-UNIDO	plerfausto.senecl@unimit.it

\* Without Lodgment charges

## WORKSHOP MATERIALS

A complete set of materials was delivered to each Workshop's participant, comprising a portfolio and brochures containing general information of the site, Agenda, Abstracts, Badge (personalized), pen and extra documents with information from IMP and Conacyt.

A set of information was transmitted via e-Mail which contained general information on the site (Cocoyoc), venue, main Program with objectives, etc.

The conferences were registered in electronic media and are being screened from sensitive sections by the authors, afterwards the final versions will be distributed among the participants.

## BUDGET

The original budget available amounted **16,000.00 €** from ICS-UNIDO and **5,200 €** from the local organizers, which amounted to **21,200 €**, in order to cover the expenses of 28 participants, 6 of them coming from abroad (Table 1). However, due to several circumstances the representatives from Venezuela (INTEVEP) and a second participant from Brazil (CENPES/ PETROBRAS) did not attend the Workshop. Also, 8 from 22 local participants invited could not make it to reach the site. Therefore, a timely agreement with the Hotel led to an important reduction of the original reservation payments to be made, which ended upon the figures shown in Table No. 2, where one observes that only a part of the original ICS-UNIDO budget was applied, i.e., **10,774.02 €**, leaving the rest unused. This amount was refunded directly by the local UNIDO Agency in Mexico City. Also, the local organizers contributed with less than their original budget, due to the proportional reduction of the number of participants, i.e., **3,700 €** instead of **5,200 €**, which allowed to complement the lateral expenses of personnel, mainly, as shown in Table No. 2.

Table No. 1  
Original Budget (in EURO) proposed for the Workshop on "**Combinatorial  
Chemistry & Molecular Design Methods: Recent Developments and  
Applications**"

<b>ICS-UNIDO Contribution in EUR (TOTAL 16,000)</b>	
<b>Accommodation and meals of 28 invited lecturers/participants</b> (Full board for 3 days 3X28X90 €)	<b>8,400 €</b>
<b>Travel for 28 (6 international, 22 local) invited lecturers/participants</b>	<b>7,100 €</b>
<b>Transport</b> (from the Airport/railway station to the site)	<b>500 €</b>
<b>Sub-Total ICS-UNIDO Contribution</b>	<b>16,000 €</b>
<b>Contributions of the hosting institution:</b>	
<b>Transport for personnel (Local)</b>	<b>1,200</b>
Conference hall	
Fax / telephone / post	<b>300</b>
Training materials	<b>700</b>
Secretariat	<b>1,500</b>
Possible contribution to cover local participants (optional)	<b>1,500</b>
<b>Sub-Total Local Organizing Contribution</b>	<b>5,200</b>
<b>GRAND TOTAL</b>	<b>16,000 +</b>
<b>(ICS contribution + Local contribution)</b>	<b>5,200=</b>
	<b>21,200 €</b>



Table 2

Real Budget (in EURO) applied to cover the Workshop on "**Combinatorial Chemistry & Molecular Design Methods: Recent Developments and Applications**" \*\*

ICS-UNIDO Contribution in € (TOTAL 16,000)	EXPENSES
Accommodation and meals, including coffee breaks for 18 participants, /invited lecturers, 6 from abroad (Argentina, Brazil, Chile, France, Italy) and 12 from Mexico. (Full board for 3 nights, 3-6 December: 3X17X106.67 €)	5,270.75 € *
Travel of 4 international lecturers (942.18 + 1445.11 + 1620.56 + 1146.61) Airplane Fares	5,154.46 € *
Local transport and airport transfers <ul style="list-style-type: none"> <li>- local transport (to and from) between Mexico City and Cocoyoc (Morelos) by rented car, fuel and toll highway: 102.83 €</li> <li>- Transport and airport taxes of international participants: <ul style="list-style-type: none"> <li>* U. Sedran: Santa Fe-Buenos Aires-Ezeiza-Buenos Aires-Santa Fe, airport taxes: 106.39 €</li> <li>* C. Mirodatos: Train Lyon-Paris-Lyon: 58.60 €</li> </ul> </li> </ul>	267.82 € *
Other expenses: Documents Copy, impression	80.99 € *
<b>Sub-Total</b>	<b>10,774.02 € *</b>
<b>Other expenses made by the hosting institution</b>	
Transport (Local) Drivers, toll highway, fuel:	500 €
Conference hall	-
Fax / telephone / post	300 €
Training materials (personalized portfolios and pens, printed material, photocopies, paper, badges, CD-ROMs)	800 €
Secretariat	1,500 €
Contribution to cover local participants expenses (travel)	600 €
<b>Sub-Total Local Organizing Contribution</b>	<b>3,700 €</b>
<b>GRAND TOTAL</b>	<b>10,774.02 € +</b>
	<b>3,700 €</b>
<b>(ICS contribution + Local contribution)</b>	<b>= 14,474.02 € *</b>

\* Refunds/Payments were made in US Dollars: current rates: 1 € = 1.33 USD = 14.45 \$(pesos).

\*\* The money transfer and payments were made through the Local office of UNIDO (Mexico City): UNIDO Mexico Office Imprest Account (Order No. 16001318, Nov 30 2006, Supplier ID 101299), signed by Mr A. Asseih, UR and Head, regional Office, UNIDO Representative, Col Polanco CP 11570, Mexico.

## **OPENING CEREMONY**

The opening ceremony was chaired by Dr. Jose-Manuel Dominguez, Research Scientist from the Mexican Petroleum Institute, who was a member of the original group that launched the initiative together with ICS-UNIDO.

Welcome speeches were also made by:

- Mr. Leonardo Rios, Director of the Area of Research and Development of the Mexican Petroleum Institute, Mexico.
- Mrs. Alejandra Zarco, Representative from Dr. Guillermo Aguirre, Director of Technology (Conacyt, Mexico).
- Mr. Pierfausto Seneci, ICS-UNIDO Scientific Expert, Pure and Applied Chemistry, Trieste, Italy

## **PROGRAMME**

The final Agenda with details is reported in the joint document entitled Annex I.

## **RESULTS AND PROPOSALS FOR FOLLOW UP ACTIVITIES**

The specific topics exposed during the Workshop set up the background for generating a fruitful discussion in the last session. Two groups were formed, the former one was headed by Dr. C. Mirodatos, who conducted a discussion on the international issues, the other one was headed by Dr. J.M. Dominguez, who dedicated the discussion on concrete local issues to promote the concept of sharing facilities in the Latin American region.

Both groups shared results and came to mutual agreements on taking the following actions:

- To create a group based on the Combinatorial/High Throughput and Molecular Design concepts to share experiences and to promote synergies, including academic, industrial, research, equipment and technological participants.
- To intervene before the European Group Federation to promote the use of "Combi" technology and to obtain grants. The Latin American group might interact with the European group in view of exchanging software, students stages and resources.
- To look for a starting (Kick-off) meeting with the assistance and coordination of ICS-UNIDO. Also, it is necessary to involve other LA countries and to make due contacts. A tentative date is March 2007, but a proposal will be in place at the end of February 2007.
- In the applications area it is necessary to identify challenges and to prepare a common project by April-May 2007.

- To map the interests of Latin American countries in biofuels on a one-by-one basis.
- In Mexico, the pathway must be worked out together with Conacyt. To build the plan, it is necessary to put a package together with a private enterprise, a government agency, an academic institution and a R&D centre. Actually Conacyt pays a half salary/one year of a researcher who spends a year in an enterprise (30 % deductible).
- To look for a contact in Conacyt, i.e., Dr. Alberto Mayorga, in order to build-up a work scheme. The first one is to build-up a Consortium driven by an Enterprise, on the "Combi/HT" subject, considering several actors. However some questions remain: (1) Does IMP can work for a private Enterprise ? (2) A Government Institution can present a proposal ?. Another action is to conform a work scheme financed by Conacyt, inspired by the Megaproject Conacyt-CFE (Consortium Program).
- To contact other companies in the country who express interest in the subject, then select common ground, contact academic associates and define strategies.

Annex I



INTERNATIONAL CENTRE FOR SCIENCE AND HIGH TECHNOLOGY  
UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION /  
MEXICAN PETROLEUM INSTITUTE

## **Agenda**

**Workshop on**

***"Combinatorial Chemistry & Molecular Design  
Methods:  
recent Developments and Applications"***

**Hacienda Cocoyoc, Mor., Mexico**

**4-5 December 2006**

## Monday 4 December 2006

09:00-9:30 Registration of participants

### **Opening Session**

9:30 -9:45 Welcome addresses & Greetings.(Dr. J.M. Domínguez, Chair, R&D Executive/IMP.

9:45 -10:00 ICS-UNIDO mandate, strategy and programmes for the benefit of developing countries. (Prof Pierfausto Seneci in behalf of Prof. S. Miertus, ICS-UNIDO, Pure and Applied Chemistry, Trieste Italy).

### **Session One**

Chairperson: Dr. Leonardo Ríos/Executive Director of Research and Postgraduate Program IMP.

#### **INTERNATIONAL INITIATIVES AND OPPORTUNITIES**

10:00 -10:30 ICS-UNIDO International programmes/initiatives within the Area of Pure and Applied Chemistry with the focus on the subprogramme of "Combinatorial Chemistry and Technologies" (Prof. P. Seneci in behalf of Prof. S. Miertus, ICS-UNIDO, Italy)

10:30 -11:00 Conacyt Current Programs for Advanced Science & Technology (Dr. Guillermo Aguirre/Q. Alejandra Zarco/Lic. José Manuel Rivas, Direction of Technology, Conacyt, Mexico).

11:00-11:30 IMP Programs and Projects Management (Dr. Leonardo Ríos, IMP Executive Director of Research & Postgraduate Program)

11:30-11:45 Discussion

11:45-12:00 Coffee Break

#### **EXAMPLES OF INTERNATIONAL INITIATIVES ON PROJECTS PROMOTED BY ICS-UNIDO**

12:00-12:30 Decision Support Tools for Combi/HT technologies. ICS-UNIDO experiences and initiatives in the field.  
Existing networks and ongoing initiatives in the field of Combi/HT: Project experience.  
Dr. Pierfausto Seneci ( ICS-UNIDO, Italy)

12:30-13:00 ICS-UNIDO experiences in the development of Combi/HT for technology assessment and selection (Dr. Pierfausto Seneci, ICS-UNIDO, Italy)

13.00 – 13.15 Discussion

13:30 –15:00 Lunch

## **Session Two**

Chairperson: Dr. J.M.Domínguez (Research Executive/IMP, Mexico)

### **TRENDS IN TECHNOLOGIES FOR COMBINATORIAL/HIGH THROUGHPUT METHODS**

15.00-15:45 Applying high throughput experimentation to some key challenges in oil and gas Chemistry.

*Dr. Claude Mirodatos, President of the EU Combi Society ( IRC-CNRS, Lyon, France)*

15.45 -16:30 Homogeneous & Heterogeneous Polymerization of Olefins with modified Zirconocene Type Catalysts (New Polyolefin Catalyst Design and its Evaluation via Combinatorial Chemistry)

*Dr. Javier Revilla (Technology Executive, CID/DESC, Mexico )*

16.30 -17:15 *Theoretical Methods: Modeling of acidity in Zeolites*

*Dr. Claudio Mota (Research Scientist, UFRJ, Brazil)*

17:15-18:00 *Paradigm Challenges by Molecular Design: Planar tetrahedral carbons and Open Heteroleptic "sándwich" compounds.*

*Dr. Alberto Vela (Research Scientist/Cinvestav Mexico)*

18:00 -18:20 *Anatomy and modelling of an industrial robot. Presentation of the mechanical, electronic, computational and algorithmic structure of an industrial robot.*

*Dr. Juan Manuel Ibarra Zannatha (REsearch Scientist/Cinvestav, Mexico)*

18:20 -18:40 *Mathematical algorithms for experimental Planning&Design*

*Tomás Beltrán (Posgraduate Student/IMP, Mexico)*

18:40-19:00 *Development of  $WO_x/ZrO_2$  catalytic materials for n-alkane hidroisomerization by combinatorial catalysis technology*

*Dr. Ascensión Montoya, (Laboratory Executive/IMP, Mexico)*

19:00 -19:20 *Assessment of hydrocarbon adsorption constants under reaction conditions and conversion of residual hydrocarbon feedstocks"*

*Dr. Ulises Sedrán, (Professor/Research Scientist/ INCAPE, Santa Fe, Argentina)*

19:20-19:50 *Development of New Materials based on Polyolefins: From Catalysts to Nanocomposites*

*Dr. Raul Quijada, (Profesor/Research Scientist/Universidad de Chile, Chile)*

19:50 -20:00 *Discussion*

20:00 Dinner

**Tuesday 5 December 2006**

## **Session Three**

Chairperson: P. Seneci (ICS-UNIDO, Italy)

### **COUNTRY REPORTS**

Combinatorial resources situation, open problems, ongoing and planned initiatives in the field in Latin American Countries

## Country / Institutional programmes' Reports

Main topics to be dealt with:

- Available infrastructure and human resources
- Available areas of development by Combi/HT methods
- Available technologies and possible participation in R&D centers
- Main products from Combi/HT resources (e.g. improved catalysts, polymers, materials )
- National companies/industries interested in the field
- On-going and planned initiatives in line with national priorities
- Possible proposals (concepts) to ICS-UNIDO for follow-up initiatives

09:00 – 11:00 Country Reports (30 min. each):

- Argentina (Ulises Sedrán )
- Brazil (Claudio Mota)
- Chile (Raul Quijada and F.Gracia)
- Mexico (J.M. Dominguez and J.M. Rivas)

11:00–11:30 Discussion

11:30-11:45 Coffee break

11:45-12:15 Industry cases::

- "Current trends and opportunities in the chemical industry"  
Mr. Mario Torres Cardona (IDESA)
- "Conacyt Program support for joint ventures with industry and R&D centres"  
Mr Jose Manuel Rivas (Direction of Technology, Conacyt)

12:15-12:30 Open discussion. Identification and development of possible common initiatives:

- Set-up of working groups
- Project proposals' development (working groups)

12:30-13:00 Presentation of results and development of follow-up action plan

13:00-13:30 Recommendations and Closing Remarks of the Expert Group Meeting

13:30–15:00 Lunch

16:00 Cloture





**Annex II**  
**FINAL CALCULATION (DETAILS)**  
**ITEMS COVERED WITH THE ICS-UNIDO BUDGET**

PROVIDER	EXPLANATION	INVOICE / RECEIPT	DATE	CURRENCY - \$ (PESOS) - USD (DOLLARS)	EURO 12/06/2006 RATE: 1€=1.33 USD = 14.45 \$	DESTINATION
Compañía Hotelera de Cocoyoc, S.A.	Accommodation, meals, coffee breaks.	74748	12/06/2006	\$ 76,162.45	5,270.75	17 Participants
Tourfe S.A., Santa Fe, Argentina	Airplane ticket (Buenos Aires-Mexico-B.Aires)	ETKT 132 5938600919	11/16/2006	1253.10 USD	942.18	Prof. Ulises Sedrán
Turismo LTDA, Rio de Janeiro.	Airplane ticket (Rio Jan-Atlanta US-Mexico-Atlanta US-Rio Jan)	ETKT 006 2277447451	11/27/2006	1922 USD	1445.11	Prof. Cláudio Mota
Aeromexico	Airplane ticket (Paris-Mexico- Paris)	0 139 4368260661 5	10/31/2006	-	1620.56	Prof. Claude Mirodatos
Turismo Cocha S.A., Santiago, Chile.	Airplane ticket (Santiago-Mexico-Santiago)	0706961	11/30/2006	1525 USD	1146.61	Prof. Raul Quijada
Radio Taxi Los Arcos, S.A.	Carrier of documents from Mexico City to Cocoyoc (80 Km)	8422	12/05/2006	\$ 840	58.13	Workshop Organizers at Cocoyoc
Banobras	Highway Tolls	5-0004607979	12/3-6/2006	\$ 351	24.29	Local organizers (displacements)
Estacion de Servicio ALSA, S.A.	Fuel	163110	12/03/2006	295	20.41	Local organizers (displacements)
Flecha Bus	Transport Santa Fe-Buenos	182161132	12/03/2006	38 USD	28.57	Prof. Ulises Sedran

	Aires					
Flecha Bus	Transport Buenos Aires- Santa Fe	182161133	12/07/ 2006	38 USD	28.57	Prof. Ulises Sedran
Aeropuertos Argentina 2000 S.A.	Airport Taxes	00432013	12/03/ 2006	18 USD x 2 = 36 USD	27.06	Prof. Ulises Sedran
Manuel Tienda Leon Ct Air S.A.	Transport Ezeiza Airport (internal)	11105186	12/03/ 2006	14.75 USD x 2 = 29.50 USD	22.18	Prof. Ulises Sedran
SNCF	Transport (train) Lyon-Paris-Ly on	GV290901095 00112221	12/02/ 2006		29.30 € x 2 = 58.60	Prof. Claude MIrodatos
Copymax	Copies, documents impression	-	12/03/ 2006	\$ 1,170.36	80.99	Organizers Documents
Total					10,774.02	