

## INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY

**Minutes of Commission I.6:  
Colloid and Surface Chemistry Including Catalysis,****40th General Assembly: Berlin, Germany 8-10 August 1999****Present**

Name	position	country	sub-com., other
------	----------	---------	-----------------

Titular members (TM)

Prof. L. K. Koopal	Chairman, TM	Netherlands	chair EP, PCDC
Prof. I. Dekany	Secretary, TM	Hungary	EP
Prof. T. Kunitake	TM	Japan	
Prof. V. Parmon	TM	Russia	EP
Prof. R.A. Schoonheydt	TM	Belgium	chair AdM

Associate Members (AM)

Prof. S. Ardizzone	AM	Italy	EP
Prof. F. Gonzalez-Caballero	AM	Spain	
Prof. Y.H. Ma	AM	USA	EP
Prof. J.A. Pajares	AM	Spain	
Prof. J. Rosenholm	AM	Finland	EP

Observers (O)

Prof. E. Altman	O	USA	
Prof. P. Liabinis	O	USA	

National Representatives (NR)

(Prof. L. Cascarini de Torre	NR	Argentina	CTC)
------------------------------	----	-----------	------

## Abbreviations

EP = Sub-Commission on Environmental protection,

AdM = Sub-Commission on Advanced Materials,

PCDC = Physical Chemistry Division Commission,

CTC = Commission on Teaching Chemistry.

## Agenda

### 40th General Assembly Meeting CI.6: Berlin, Germany 8-10 August 1999

1. Get together, welcome and introduction.
2. Commission I.6 Meeting Schedule.
3. Minutes of the Commission I.6 Meeting of the 39th General Assembly, Geneva, Switzerland, August 23-30, 1997.
4. Business arising from the CI.6 Meeting of the 39th General Assembly.
5. Chairman report
6. Projects: reports and status (Round I)
  - 6.1 Existing Projects
  - 6.2 Manuscript Flow Sheet and Dissemination of results.
7. Project Proposals: reports (Round I)
  - 7.1 Project Proposals accepted by C I.6
  - 7.2 Project proposal and review process flow chart.
  - 7.3 Projects Proposals i.s.n.
  - 7.4 Project suggestions
  - 7.5 Preliminary Project flow sheet
8. Joint Meetings with
  - 8.1 Commission I.3 Electrochemistry
  - 8.2 Commission I.7. Biophysical Chemistry
  - 8.3 Commission III.3. Photochemistry
  - 8.4 Commission VI.1. Fundamental Environmental Chemistry
9. Activities of the Physical Chemistry Division Commission
11. Structure, Finances, Membership of Commission I.6
  - 10.1 Projects
  - 10.2 Projects Proposals
  - 10.3 Project suggestions
  - 10.4 Further suggestions for future projects.
11. Structure, Finances, Membership of Commission I.6
12. Any other business / Closing.

#### 1. Get together, welcome and introduction.

Koopal welcomed the members of Commission I.6. The attendees introduced themselves, a special welcome was given to the Young Observers: Dr. Eric Altman (Yale, USA) and Dr. Paul Liabinis (MIT, USA). "The introductory guide to IUPAC", provided with the supporting material for the meeting, is intended to help the newcomers to unravel the IUPAC jargon.

Prof. L. Cascarini de Torre, the National Representative of Argentina, is present at the GA, but she is not able to follow the meeting of C I.6 because of her duties in the Committee on Teaching of Chemistry. Prof. Ralston (TM, PCDC) has not been able to come to the meeting, because of urgent duties as director of the Ian Wark Institute. Prof. Liebau and Prof. Ramsay, both members of the Sub-Commission on Advanced Materials (AdM), have notified the chairman of their absence. No message of absence has been received from Cazabat (AM), R. Miller (AM), Iwasawa (AM), Barbosa (AdM), F. Rouquerol (AdM) and K. Unger (AdM).

## **2. Commission I.6 Meeting Schedule.**

The meeting scheme is briefly discussed and slightly adjusted to properly account for the inter-commission and inter-division meetings. In view of the absence of members of the Sub-Commissions (SC) that are not members of C I.6 and the fact that only one member of SC-AdM is present, it is decided that the Sub-Commission meetings will be integrated in the meeting of C I.6.

The secretary accepts the invitation to arrange a dinner table where we can meet for the traditional C I.6 dinner.

## **3. Minutes of Commission I.6 Meeting, Geneva 1997.**

The minutes of the meeting in Geneva are accepted.

## **4. Business arising from Commission I.6 Meeting, Geneva 1997.**

With regard to point 10, Membership of Commission I.6, the chairman remarks that due to an administrative misunderstanding the associate membership of dr. L.R. Fisher never has been formalized.

The projects and project proposals will be discussed later.

## **5. Chairmans report**

### *General and PCDC.*

The main duty of the chairman is the communication with other bodies within IUPAC and the coordination of the activities of C I.6. Communication with the Bureau/Executive Committee (EC) has been mainly on the Strategic Plan and the Reports of the Bureau meetings. The communication with the Secretariat was about the administration of C I.6 Members, the new Web site of IUPAC and C I.6, the project administration and the finances of C I.6. The contacts with the Physical Chemistry Division Commission (PCDC) were related to the Strategic Plan, the main IUPAC policies in general, the progress in the work of C I.6 and the finances of C I.6. Koopal has attended the PCDC meetings in Frankfurt (February 1999) and Berlin (GA).

### *International organizations in the field of Colloid and Surface Chemistry including Catalysis.*

Communication with international organizations was carried out by reporting the activities of C I.6 in the Newsletter of IACIS (International Association of Colloid and Interface Scientists).

### *Strategic Initiative on Materials.*

This interdivisional activity headed by Corish (chairman of the Inorganic Chemistry Division) and Gilbert (chairman of the Macromolecular Division) aims to co-ordinate all activities in the field of material science. C I.6 has reported its activities in this field to Corish. Koopal will attend the meeting organized by Corish and Gilbert during this GA.

### *Future structure IUPAC.*

The Commission structure will be abolished at the GA meeting in Brisbane (2001). The reason for this change is financial; partly the Bureau aims for more flexibility. Objections/comments have been formulated by the chair of C I.6, by the PCDC and by others, but these remarks have only lead to minor changes in the plans for the future. Until the meeting in Brisbane the Commissions should continue their work as before, the Bureau/EC hopes and wishes that, the IUPAC work is carried out at, at least, the same level as before. The new structure will be project oriented. Starting in 1999, new projects should be submitted directly to the PCD/Secretariat. The proposals will be reviewed by the Divisions and external referees. After acceptance, the project coordinator will be responsible for the project. The final review of the produced documents will be the same as for the present projects.

## **6. Projects: reports and status (Round I)**

### 6.1 Existing Projects

#### Project 160/2/95: Pillared clays and pillared layers.

Report by Schoonheydt. The project is focused on nomenclature and characterization, it was presented in Guildford and the manuscript was accepted by C I.6 in Geneva. After some polishing work and adding a summary, the final draft has been forwarded for refereeing to the IDCNS (nomenclature commission), the PCDC and several independent experts. After receiving the comments, the paper will be prepared for publication in Pure and Applied Chemistry. The project should be finished before the GA in 2001. The Commission expresses its appreciation for the good work done.

#### Project 160/5/98: Measurement and Interpretation of Electrokinetic Phenomena (MIEP)

The chairman gives a brief history of the project. Initially the project was proposed by S.S. Dukhin. The proposal has been forwarded by Ralston to C I.6 at the GA meeting in Guilford (1995), where it has been accepted for a feasibility study. In the next biennium Ralston has been trying to find a project leader, but without success. In the C I.6 meeting in Geneva (1997) the need for the MIEP-project has been re-established.

At the conference on Electrokinetic Phenomena (Salzburg, 1998) a special Workshop on MIEP, chaired by Rosenholm and Koopal, was held. At this occasion, Prof. Gonzalez-Caballero showed his willingness to act as coordinator of MIEP and several scientists expressed their wish to participate in the working party. At the end of the Workshop the initiation meeting of the Working Party was held and the MIEP project outline was discussed.

Gonzalez-Caballero reports that in the time between Salzburg and Berlin the project has been submitted to the PCDC for a feasibility study. Two reviews have been obtained that were both strongly in favor of this project. In January 1999 the project proposal was submitted to PCDC and Secretariat and it was accepted in April 1999. The tasks have been divided over different members of the working party. A first draft of a manuscript will be presented at the Electrokinetic Phenomena Conference in Dresden (September 2000). An improved draft should be ready at the C I.6 meeting at the GA in Brisbane (2001). The Commission is pleased with the scientific quality that is gathered in the working party and looks forward to the first draft.

Project 165/15/89/E: Environmental Protection: Surface, Colloid and Catalytic Aspects.

Koopal reports that this project, coordinated by Ralston, has been finished late 1997. Conferences on "Water Pollution" (J. Gregory; London 1992; Proceedings: Colloids Surfaces A: 73, p. 1-303, 1993), "Soil Pollution" (S.R. Sivaraja Iyer; Madras 1994) and "Environmental Catalysis" (M. Misono, TM C I.6; Tokyo; Proceedings: Catalysis Today, 35, 1-2, 1997) were supported by this project.

Project: 160/3/95/E: Colloid Chemical and Catalytic Processes for the control and Protection of Environmental Pollution.

Report Koopal. This project is a follow-up of 165/15/89/E. The project has been centered on an international conference "Interfaces Against Pollution" (Koopal, Wageningen 1997). The proceedings recently appeared in Colloids and Surfaces A, 151, 1-2, 1999. A possibility for a follow-up of this activity would be the organization of a next conference on the use of colloid and surface chemistry in the field of environmental protection. The Commission will decide in Round II on the future of this project.

Project: 166/1/93/AM: Nomenclature of structural and compositional characteristics of ordered microporous and mesoporous materials. (Initially this project was named: Nomenclature in Zeolites and new Microporous Crystalline Materials).

The chairman briefly sketches the history of this project that was proposed by Unger and Rouquerol at the C I.6 GA meeting in Lisbon (1993). At the meeting in Guilford (1995), a draft document "Nomenclature in ordered microporous and mesoporous materials" by prof. Liebau plus comments by Delmon has been discussed in the SC-AdM. The main emphasis in the document should be on nomenclature aspects. A new draft document: "Nomenclature of structural and compositional characteristics of ordered microporous materials" by Engelhardt, Liebau, McCusker and Schüth was presented to the SC-AdM at the meeting in Geneva. (1997). Again several adjustments were required in order to obtain a rigorous, but digestible document. In Geneva Delmon and Unger hand over the responsibility for the project to Schoonheydt who is the new chairman of SC-AdM.

Schoonheydt reports that after consultation with the International Zeolite Association (IZA), it has been decided to split the work in two parts, one on nomenclature and one on classification. The recommendation on nomenclature has been worked out by McCusker et al. (who also represents IZA). Liebau will work out separately, and outside the responsibility of C I.6, a systematic classification that can serve as a basis for the nomenclature paper. The new draft of McCusker et al. has been send to all Members of C I.6. Koopal mentions that the draft by Liebau on the systematic classification is also available and that Liebau welcomes comments.

The Commission expresses that the draft of McCusker et al. is of high quality and well structured. Minor comments will be sent directly to McCusker, or to the chair of C I.6. After a last minor adjustment, the paper will be ready for review outside the Commission.

## 6.2. Manuscript Flow Sheet and Dissemination of results.

Documents approved by C I.6 should pass a specific procedure before they can be published in Pure and Applied Chemistry. The flow sheet from page 210 of the IUPAC Handbook 1998-1999 is handed out and briefly discussed.

For the dissemination of the results of the work done in C I.6, the Web site of IUPAC and that of C I.6 may be very helpful. Additionally there is still the possibility to

request reprints of the documents produced in C I.6 through the service that is kindly provided by Jean and Françoise Rouquerol (Centre de Thermodynamique et de Microcalorimétrie du CNRS, Marceille, France; fax +33 91 28 20 53, e-mail [Francoise.Rouquerol@ctm.cnrs.mrs.fr](mailto:Francoise.Rouquerol@ctm.cnrs.mrs.fr)).

## 7. Project Proposals: reports (Round I)

### 7.1 Project Proposals accepted by C I.6

#### *Recommendations for the use of Atomic Force Microscopy in the Direct Measurements of Colloidal Forces*

Koopal informs the meeting about this proposal that originates from the C I.6 meeting in Guilford (1995). After this meeting, Ralston has made an inventory of scientists interested in this project. At the Geneva meeting (1997), the priority of the project has been re-established and Ralston has been appointed as project leader.

After establishing a working party a Feasibility Study is submitted to the president of the PCDC in February 1999, however it turns out that this procedure is no longer valid. The project is re-submitted in May 1999 by Koopal to the Secretariat and the PCDC using the new project proposal form. The proposal will be sent out for review by the Division and/or the Secretariat. No further news is available. The intention of the working party is to have a first draft ready around August 2000 and the final draft at the C I.6 meeting in Brisbane (2001).

The Commission briefly discusses the focus of the project and stresses again that the focus should be on the colloidal force measurements

#### *Electrochemistry and interfacial chemistry in environmental clean-up and green chemical processes*

The chairman mentions that this is a joint proposal with Commission I.3 on Electrochemistry. Coordinators are Brett, Rusling (both C I.3) and Arizonne (C I.6). Electrochemistry and interfacial chemistry offer good possibilities for remediation and prevention of pollution. A project proposal has been submitted in February 1999 to the ICSU (International Council for Science) for funding. Submission of the project to the ICSU has been stimulated by the PCDC.

Ardizonne contributes that the aim of the project is organize one or two workshops and as a result of these workshops to produce a monograph. The status of the project will be further discussed in the joint meeting with C I.3 (see minutes 8.1)

### 7.2 Project Proposal and review process flow chart

To inform the members of C I.6 about the new procedures for project proposals the "Project submission Form" and the "Project Submission Flow Chart" have been enclosed in the materials for the meeting. The Commission accepts the information without further discussion.

### 7.3 Project Proposals in statu nascendi

#### *Recommendation for the Characterization of Inorganic Membranes*

Koopal starts with a brief history of the project. Based on a request of the SC-AdM Ester Barbosa has clarified in 1995 the state of art around definitions and nomenclature of membranes. Commission IV.3 (Functional Polymers) has a

document: Nomenclature of organic and inorganic membranes (Prof. Wendorff) in preparation. No further work is required on nomenclature, however recommendations on the characterization of membranes remain important. Based on this report Delmon, as chairman of the SC-AdM, has approached C. VI.3 and a separation of the work is proposed: C VI.3 (Albertsson) should handle the characterization of organic membranes and C I.6 the inorganic membranes. At the Geneva meeting (1997), C I.6 has adopted the inorganic membranes project. In November 1998, Ma has agreed to coordinate the project. In consultation with Koopal the project proposal draft has been produced. This draft, that is present in the material for the C I.6 meeting, is open for discussion.

Ma presents a list of individuals that have agreed to serve on the working party and a list of preliminary fields of attention suggested by members of the working party. Anchoring points for a discussion of the work are the forthcoming conferences (2000 and 2002) on inorganic membranes.

The discussion in C I.6 indicates that the general feeling is that this is a good proposal. Focussing of the work may still need further attention; a distinction should be made between dense and porous membranes. Characterization can be done in many ways; the dry and wet (electrokinetic) characterization of membrane surfaces could also be a useful part of the recommendation. Pajares offers his help in finding the right people in the case that carbon membranes are included.

*Glossary of terms in the photocatalysis (and radiation catalysis)*

At the meeting in Geneva (1997), a feasibility study in this field has been discussed and it was concluded that any overlap with running or imminent projects of the commissions on Photochemistry III.3 and Electrochemistry I.3 must be checked.

Parmon reports that he has made a draft document on this topic based on an article published in *Catal. Today* (39, 1997, 137). This draft has been sent out for comments to Commissions I.3 and III.3.

Serpone of C III.3 has answered that two documents on heterogeneous photocatalysis have recently appeared in *Pure and Applied Chemistry*. He is skeptical whether issues that remained unresolved in these documents can be resolved by a new study. If the study were to be accepted by C I.6 and C III.3 he recommends an extensive literature search (more thoroughly than the one in *Catal. Today*) in conjunction with the consultation of other people in the field.

Commission I.3 has replied that they have no specific comments to the draft and they like to discuss collaboration in the joint meeting with C I.6 at the GA.

Commission I.6 decides to postpone actions until after the joint meetings with C I.3 and C III.3.

*Nomenclature and Recommendations for the Characterization of Powders for Advanced Materials Manufacture.*

The history of this proposal is explained by Koopal. At the international conference "Powder characterization for advanced materials manufacture" (Gijon June 1997) a workshop, organized by Pajares and Delmon, has been held on the topic of nomenclature unification in this field. Several participants of the workshop did express their interest in joining a working party. In the C I.6 meeting in Geneva (August 1997) matters have been discussed. After the meeting, Delmon has prepared a brief project outline and this outline has been distributed among the participants of the Gijon Workshop and it was sent to Corish, chairman of the Strategic Initiative on Materials. A rather limited number of people have responded and the same has happened to a subsequent official call by Delmon and the chairs of C I.6 and SC-

AdM. As a result of mentioning of the project in the IACIS Newsletter dr. V. Hackley (NIST, Ceramics division) has expressed his interest.

Schoonheydt mentions that a poor focussing of the project could be the main reason for the low response. Several members of I.6 agree with this view. The future of the proposal will be further discussed in Round II.

#### 7.4 Project suggestions

At the meeting in Geneva, suggestions have been made on five possible projects.

- *Colloidal stability and flow properties of concentrated dispersions (Rosenholm)*

Rosenholm reports that the concentrated dispersions suggestion has not been given attention. Dr V. Hackley from NIST has expressed his interest in this activity after reading about it in the IACIS Newsletter.

- *Use of Colloid Chemistry in the field of Environmental protection (Koopal)*

Koopal reports that he has briefly investigated the possibility of another conference in the field of Colloid Chemistry and the Environment. As part of the ACS meetings Elimelech c.s. have organized several symposia on "Colloids and Interfaces in the Aqueous Environment" in the USA. An optimal situation would be every two years a conference with alternating location between the USA and Europe (or the rest of the world) and an advisory committee consisting of members from both USA and Europe+. Although this idea was given a warm welcome by Elimelech and several others in the field, no further steps were taken.

- *Colloid chemical aspects of in-plant remediation (Ma)*

- *Membrane separation processes (Ma)*

Ma reports that his two suggestions have been dormant, also because he has been heavily involved in the Inorganic Membranes proposal.

- *Manual of methods and procedures for characterization of catalysts in situ conditions (Parmon)*

Parmon reports that his activities have been concentrated on the Photocatalysis proposal and that his suggestion on characterization of catalysts in situ conditions (previous manual by J. Haber, Pure Appl. Chem. 1995) has not been given attention.

Commission I.6 will decide in Round II about the future of these suggestions.

#### 7.5 Preliminary Project flow sheet

The Flow Chart (handed out with the materials for the C I.6 meeting) indicates the procedure to be followed for a project suggestion (also applicable for suggestions that occur between two C I.6 meetings). The information is accepted without further discussion.

## **8. Joint Meetings**

### 8.1 C I.6 and Commission I.3: Electrochemistry

After a welcome, the attendees of the meeting introduced themselves and the chairmen briefly mentioned the current and future projects. The areas of main common interest were Microstructures, Nanomaterials, Micromachining, Size effects on electrocatalysis, Photochemistry and catalysis and Electrochemistry and interfacial chemistry for the environment. Because of the large field of common interest it was decided to first have informal discussions in three groups, i.e. (1) size effects and small scale materials (C I.6: Altman, Gonzalez-Caballero, Kunitake, Rosenholm, Schoonheydt; C I.3: Ahlberg, Feliu-Martinez, Schriffin and Siegenthaler), (2) photochemistry and catalysis (Parmon C I.6 and Uosaki C I.3) and (3) electrochemistry for the environment (C I.6: Ardizzone, Koopal, Dekany; C I.3 Brett, Rusling). After rejoining, the results of the discussions were reported and the following has been decided.

- Project: 130/33/98: "Electrochemistry for the environment" (C I.3: Brett and Rusling).

The object of this project is to bring together information on the principles and uses of electrochemical contributions to curing existing environmental problems and to prevent future ones through process integrated environmental protection. A critical appraisal will be given and recommendations will be made as to the most appropriate procedures to follow. Ardizzone, Koopal and Dekany of C I.6 express their interest in this project. A first draft of the study will be sent to them in August 1999. If they will make a substantial contribution to the next draft, this will become a joint project. The intention is to finish this project before the GA in Brisbane 2001.

- "*Electrochemistry and interfacial chemistry in environmental clean-up and green chemical processes*" (C I.3: Brett, Rusling, C I.6: Ardizzone).

Brett reports that this project is approved by the ICSU, but the budget allowed is rather small. The proposal will be resubmitted to the PCDC for further support. The intention is to hold a well announced workshop before August 2001 in conjunction with a main conference on colloid and interface chemistry or on electrochemistry. A small workshop may be held in 2000 to "shape" the activities. Completion of the project will be probably after the GA 2001.

- "*Glossary of terms in the (heterogeneous) photocatalysis (and radiation catalysis)*" (Parmon).

C I.3 sees little overlap with their work and is only interested in keeping in touch about the documents produced.

- "*Size effects in electrochemical reactivity and catalysis*" (C I.3: Ahlberg)

This is an interesting proposal, but it needs more focussing. Ahlberg prefers focussing towards the electrochemistry. She will make a draft and send it to the C I.6 members of the discussion group for comments and expressions of interest.

- "*Microstructures and Nanomaterials*" (C I.3: Schriffin)

Although interesting, this suggestion has not been further evaluated. No decisions are made.

## 8.2 C I.6 and Commission I.7: Biophysical Chemistry

After a welcome by the chairmen, the attendees of the meeting introduced themselves. The current and future projects of C I.7 were mentioned. Koopal mentioned the Electrokinetics project of C I.6. Members of C I.6 expressed interest in various current

projects of C I.7: Liposomes (Dekany, Gonzalez-Caballero, Kunitake and Parmon), Lipid Mesophases (Rosenholm), Scanning Calorimetry on Biological Substances (Gonzalez-Caballero, Koopal), Computations in Biophysical Chemistry (Parmon). The project leaders were invited to keep these members informed about the developments of the projects. The joint meeting was appreciated by both Commissions, but there is no need for specific further actions.

### 8.3 C I.6 and Commission III.3: Photochemistry

After a welcome and introduction of the attendees, Bolton, chairman of III.3, briefly mentioned the current and future projects of III.3. He also expressed his concern with the developments in IUPAC and stressed that in future photochemistry could be equally well part of Division I than of Division III (Organic Chemistry). After a brief discussion, Koopal pointed out that the main point of common interest is Photocatalysis, both commissions have activities in this area. The meeting agrees that cooperation in this field is needed.

Commission III.3 has a project *Glossary of terms in Photocatalysis* (number 330/21/98), coordinated by Bolton. The present document needs some revision and Parmon agrees to join the working party.

Visa versa Bolton will participate, and/or appoint a specialist that represents C III.3, in the working party that critically examines the C I.6 project proposed by Parmon "*Glossary of terms in the (heterogeneous) photocatalysis (and radiation catalysis)*". The project proposal should be formulated by the end of 1999, taking into account the work done in 330/21/98. Early 2000 the working party should be established and the proposal should be submitted to the Divisions and the Secretariat.

### 8.4 C I.6 and Commission VI.1: Fundamental Environmental Chemistry

The chairman of VI.1 presented the current and future projects of C VI.1. Koopal gave a brief outline of the work of C I.6 and that of SC-EP in particular. The main aim of VI.1 is to produce a series of specialized books on fundamental aspects of environmental chemistry, while the SC-EP has been active in organizing conferences followed by proceedings in refereed journals. After a discussion of the projects, the conclusion is that coordination between the Commissions is best served by a regular exchange of information. The two chairmen will keep each other informed.

## **9. Activities of the Physical Chemistry Division Commission**

Prof. Cvitas, president of the PCDC, addresses the meeting about the restructuring of IUPAC and the needs felt by the Bureau/EC for a new definition of the IUPAC mission over the next decade. The meeting agrees that it will be important for IUPAC to retain and/or improve its relations with the National Organizations, the Chemical Industry and the International Professional Organizations.

In order to respond adequately to the new structure the PCDC will enlarge its membership (at least till the GA in Brisbane) with the chairmen of the Commissions in order to be able to coordinate the projects and to establish focusing points. Elections for PCDC membership will be made by the members of the Phys. Chem. Commissions during the present GA meeting. Information about the candidates circulates. The nominated candidates include the chairmen of the seven Commissions

of Division I. In the newly elected PCDC the role and tasks of the PCD will be reconsidered.

After Cvitas has departed, all members of C I.6 express their approval with the nomination list.

## 10. Discussion of Projects (Round II)

Actions to be taken by the underlined persons.

### 10.1 Existing Projects

“*Pillared clays and pillared layers*”, will be submitted for publication (Schoonheydt).

“*Interpretation and Measurement of Electrokinetic Phenomena*”. A first draft will be presented to C I.6 in September 2000 (EKP conference-Dresden) (Gonzalez-Caballero).

“*Colloid Chemical and Catalytic Processes for the control and Protection of Environmental Pollution*”. The project will be closed.

Succession of this project by a conference in the field of Environmental Catalysis (like the one organized by Misono) is a good option. Kunitake will discuss this option with Misono and Iwasawa and report to Koopal.

The joint project of C I.3 and C I.6 on “*Electrochemistry and interfacial chemistry in environmental clean-up and green chemical processes*” (Brett, Rusling, Ardizzone) can be considered as a follow-up of the IAP conference. Koopal will keep Elimelech (N.B. also member of VI.1) informed about the developments.

“*Nomenclature of structural and compositional characteristics of ordered microporous and mesoporous materials*”. Comments should be sent to Schoonheydt before September 15, 1999. Schoonheydt and Koopal take care that the project will be send out for the IUPAC and external review.

### 10.2 Project Proposals

“*Recommendations for the use of Atomic Force Microscopy in the Direct Measurements of Colloidal Forces*”. After acceptance of the proposal a first draft should be prepared and send to C I.6 around August 2000 (Ralston). The final draft should be ready at the GA meeting in Brisbane.

“*Recommendation for the Characterization of Inorganic Membranes*”. A focussed proposal will be submitted to the PCDC/Secretariat before the end of 1999 (Ma). A workshop will be organized in conjunction with the Inorganic Membranes conference in Montpellier (2000). (N.B. Com. IV.3 has not started a project on characterization of organic membranes).

“*Glossary of terms in the photocatalysis (and radiation catalysis)*”. Parmon (C I.6) and Bolton (C III.3) will formulate a well-focussed (joint) project proposal by the end of 1999. After circulation to the Commissions, the proposal should be submitted to the Divisions early 2000.

Parmon will stay in close contact with Bolton about the C III.3 project *Glossary of terms in Photocatalysis* (number 330/21/98).

*“Nomenclature and Recommendations for the Characterization of Powders for Advanced Materials Manufacture”*. Schoonheydt will consult Delmon, Ramsay, Hackley (NIST) and Rosenholm about the scope of the project and determine how the project can be more clearly defined. The manufacture of the advanced materials themselves should not be part of the project. Preferably, the outcome of the consultation will be communicated to CI.6 by the end of September 1999. If the result will be positive, it would be advisable to launch a project proposal early 2000.

### 10.3 Project suggestions

*“Colloidal stability and flow properties of concentrated dispersions”*. Rosenholm will consult specialists in the field (Hackley, Bogar, Bushcal, Van Meegeen, Lekkerkerker, Vincent) about the focus and feasibility of a project on concentrated dispersions. Early 2000 he will report his findings to the Commission.

*“Use of Colloid Chemistry in the field of Environmental protection”*. In view of the ICSU project (organization of workshop in conjunction with a mayor Colloid Chemical or Electrochemical conference) further actions are cancelled.

*“Colloid chemical aspects of in-plant remediation”* and *“Membrane separation processes”*. Both no further action.

*“Manual of methods and procedures for characterization of catalysts in situ conditions”* No further action.

### 10.4 Further suggestions for future projects.

#### Actions to be taken by the underlined persons.

Several suggestions for new projects are discussed.

\* Adsorption of macromolecules, biological cells and bacteria (Schoonheydt). Comments: Polymers complex field (co-polymers, branching, grafted polymers, etc.), but not much confusion about terminology. Biological cells and bacteria adsorption: emerging field. No decision made.

\* Atmospheric (photo)catalytic chemistry (Altman, Parmon). It may be worthwhile to organize a workshop “Surface Phenomena on Atmospheric Aerosols and their role in Atmospheric Chemistry”. Comments: It will be necessary to make an inventory of the needs and to focus the topic in relation to both “Why IUPAC?” and what will be the target (group). In addition, the international professional organizations in this field should be consulted. Possible action by Parmon.

\* Environmental Catalysis (Ma). Comment: Option for a new conference in this field will be investigated by Kunitake (see also point 10.1).

\* Recommendations for the use of a quartz crystal microbalance (QCM) for the investigation of wet adsorbed layers and/or coated surfaces (Kunitake). Comments: Good suggestion; could be generalized to acoustic means to characterize bound surface layers, on the other hand is focussing very important. The project should be manageable in two years time and the target group should be clear. Kunitake will investigate the situation and report to C I.6 in the second half of 2000.

\* Nomenclature recommendation on self-assembled structures/phases at surfaces (Liabinis). Self-assembly in solution is reasonably well defined, but for the various forms of self-assembly at surfaces no common language exists. Comments: Difference should be made between inorganic and organic layers and between 2D and 3D structures. Clear focus is required. Liabinis will consult specialists in the field and make an inventory of the needs for a recommendation. He will report his findings to C I.6 around the middle of 2000.

\* Nano-structures and nano-composites (1–5 nm particles) of inorganic and macromolecular nature (Dekany). Comments: postpone until future, enough activities.

\* Extension of the classification of adsorption isotherms by Giles to adsorption under near critical and super critical conditions. (suggested by letter of Prof. E.D. Shchukin, John Hopkins University, Baltimore, USA to the chair of C I.6). Comment: No needs for this project, the present standard isotherms cover this field.

## 11. Finances, Structure, Membership of Commission I.6

*Finances.* C I.6 has made very limited spending the last two years. This is largely because there was no budget allocated to C I.6 and some misunderstanding occurred in the communication between the chair of C I.6 and the president of the PCDC. For the next biennium, there will be more clarity about the available budget.

*Structure.* It is decided that C I.6 will retain its full size and maintain its Sub-Commissions on Environmental Protection and Advanced Materials.

*Membership.* Members have to be elected for C I.6 and for the Sub-Commissions EP and AdM. All Commission members are strongly advised to become active in one of the projects or project proposals. Election is only for a two-year period (January 2000 and August 2001) after which the Commissions will be abolished. The nomination for members for C I.6 and the two Sub-Commissions, as presented by the Chairman and the Secretary, finds approval in the meeting.

*Titular Members.* Elected are Koopal, Dekany, Gonzalez-Caballero, Kunitake, Ma, Parmon, Rosenholm and Schoonheydt.

*Associate Members.* Ardizonne, Iwasawa and Liabinis are elected. Kunitake will inform Iwasawa about the procedures in C I.6 and about the present meeting. The meeting agrees that Dabrowski (Poland), Rehage (Germany) and Gregory (UK) will be asked to join C I.6 also as *Associate Members*. (N.B. This has been done by the Secretary, all three agreed to serve from January 2000 until August 2001 as AM).

Koopal and Dekany are re-elected as, respectively, *chairman and secretary*.

The Sub-Commission on *Environmental Protection* will consist of the following members: Koopal (chair), Ardizonne, Gonzalez-Caballero, Iwasawa, Parmon and the new members Dabrowski, Gregory and Rehage.

The Sub-Commission on *Advanced Materials* will have Schoonheydt as chairman and Dekany, Kunitake, Liabinis, Ma and Rosenholm as members that are also member of C I.6 together with Liebau and Ramsay as external members. McCusker will be invited as member too. (N.B. McCusker prefers to be active in the working party on Porous Solids, rather than to join AdM)

Cazabat, Miller, Pajares, and Ralston retire from C I.6 by January 1, 2000. Miller has been member for 2 years. The chairman thanks Cazabat, Pajares and Ralston for their

long service to IUPAC and for the valuable contributions they made to the work of C I.6.

## **12. Any other business / Closing**

The only other business that comes to the table is raised by Schoonheydt, who wants to stress again that in the coming decenium adsorption of biological materials will become important and that C I.6 could play a role here. The meeting does not see a clear perspective and invites Schoonheydt to consult specialists about the need and the direction of a possible IUPAC investigation.

Koopal concludes that it was a fruitful and pleasant meeting, he thanks the participates for their contributions and closes the meeting by wishing all a save trip home.

Luuk Koopal, Chairman,  
Imre Dekany, Secretary.