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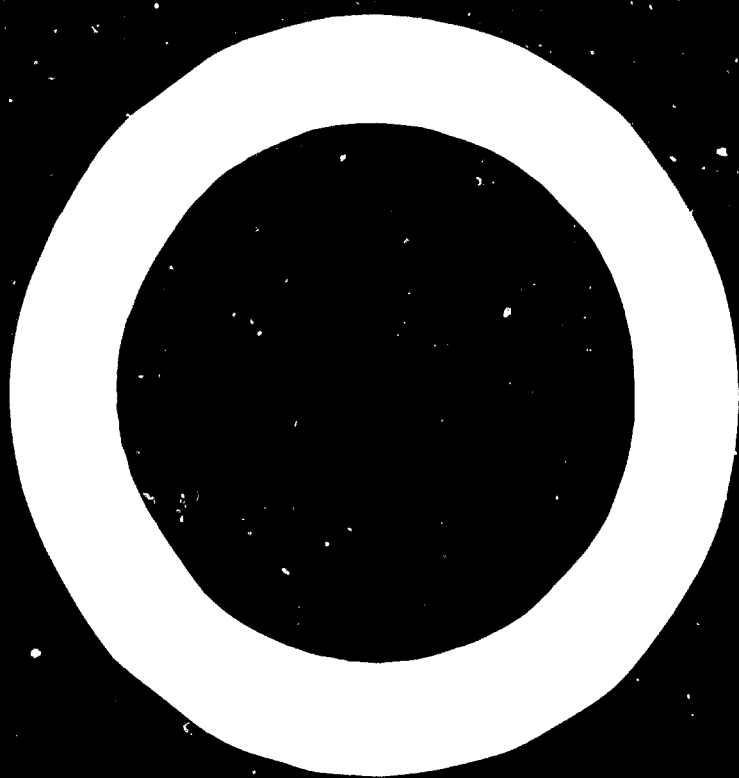
UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

**INTERREGIONAL
PETROCHEMICAL SYMPOSIUM
ON THE DEVELOPMENT
OF THE
PETROCHEMICAL INDUSTRIES
IN DEVELOPING COUNTRIES**

**BAKU, USSR
21 - 31 OCTOBER 1969**

D00336

We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards, even though the best possible copy was used for preparing the master fiche.



SECRETARIAT

	<i>UNIDO</i>	<i>USSR</i>
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Technical Director	Mr. H. Mark	Mr. S. S. Kulberg
Technical Secretary	Mr. H. May	Mr. V. A. Linetsky
Documentation Officer		Mr. V. M. Lozhkin
Administration Officer	Mr. F. W. Herold Mr. R. Rotticci	

Location of the Symposium

BAKU

**Conference Hall of the Presidium of the
Academy of Sciences of the AZERBAIJAN SSR**



SYMPOSIUM INFORMATION

Admission

Only persons designated by UNIDO and the Government of the USSR can be accepted as participants.

Registration

Participants should report on arrival to the registration desk.

Badges

Participants are requested to wear the name badges distributed to them upon registration; in case of loss the registration desk should be informed.

Distribution of documents

Summaries of the papers listed in the programme and copies of the full text of the papers presented are now available.

Seating

There are no formal seating arrangements but it is desirable that during each meeting the authors whose papers are to be presented and discussed should sit in the front row.

Languages and Interpretation

Speakers must use English, French, Russian or Spanish. Simultaneous interpretation into the other three languages will be provided.

Presentation of papers

The Administrative Officer should be informed on any services required, and drawings and slides, etc. should be submitted in good time before each session. Participants presenting papers are requested to attend a briefing in the Office of the Technical Director/Technical Secretary a quarter of an hour before the session at which the paper is to be presented. It is requested that participants should limit their time of presentation to 15 minutes.

Participants should speak slowly and distinctly in order to facilitate interpretation.

Discussion

Speakers should not start until they have been invited to do so by the Chairman of the Session and their microphone has been switched on; name and country should be announced each time.

Immediately after speaking, participants are asked to be good enough to summarize their remarks in writing on the forms distributed for this purpose. These forms, which help to guarantee the accuracy of the records, should be returned to the Administrative Officer.

Authors should, in the same way, provide summaries of their answers to questions raised on their papers.

Final corrections

In order to speed up publication of the proceedings, the Secretary of the Symposium will be present, and any corrections, additions, figures or notes which it may be desirable to introduce in the final version of the papers should be submitted to him; authors are in return asked to be kind enough to reply as soon as possible to any points he may wish to clear up in connexion with their papers. The co-sponsors cannot undertake to make changes which may be requested after the meetings have ended.

PROCEEDINGS

Publication

The proceedings will be published by UNIDO about six months after the Symposium

Publicity

United Nations publications are given a very wide publicity. They are reviewed and advertised in scientific and technical journals, abstracted by abstracting journals, listed in national bibliographies, deposited for public reading in libraries and displayed at book fairs and scientific conferences. Catalogues and advance notices of United Nations publications are distributed widely, and may be had free on request.

TIME TABLE

Tuesday, 21 October 1969

8.00– 9.00	Registration of participants
9.00–10.45	Opening session
10.45–11.00	Break
11.00–13.00	Session I, Section A
15.00–16.30	Session II, Section A
16.30–16.45	Break
16.45–18.00	Session II, Section A
19.00	UNIDO reception

Wednesday, 22 October 1969

9.00–10.45	Session III, Section A
10.45–11.00	Break
11.00–13.00	Session III, Section A
15.00–16.30	Session IV, Section A
16.30–16.45	Break
16.45–18.00	Session IV, Section A
19.00	Social events

Thursday, 23 October 1969

9.00–10.45	Session V, Section A
10.45–11.00	Break
11.00–13.00	Session V, Section A
15.00–16.30	Session VI, Section B
16.30–16.45	Break
16.45–18.00	Session VI, Section B

Friday, 24 October 1969

9.00–10.45	Session VII, Section B
10.45–11.00	Break
11.00–13.00	Session VII, Section B
15.00–16.30	Session VIII, Section C
16.30–16.45	Break
16.45–18.00	Session VIII, Section C
19.00	Social events

Saturday, 25 October 1969 Works visit

Sunday, 26 October 1969 No official business

Monday, 27 October 1969

9.00 - 10.45	Session IX, Section C
10.45 - 11.00	Break
11.00 - 13.00	Session IX, Section C
15.00 - 16.30	Session X, Section D
16.30 - 16.45	Break
16.45 - 18.00	Session X, Section D

Tuesday, 28 October 1969

9.00 - 10.45	Session XI, Sections D and E
10.45 - 11.00	Break
11.00 - 13.00	Session XI, Sections D and E

15.00 - 16.30	Session XII, Section E
16.30 - 16.45	Break
16.45 - 18.00	Session XII, Section E

19.00	Social events
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Wednesday, 29 October 1969 Works visit

Thursday, 30 October 1969 Works visit

Friday, 31 October 1969

9.00 - 10.45	Session XIII, Second Development Decade
10.45 - 11.00	Break
11.00 - 13.00	Session XIII, Draft Report
15.00 - 16.30	Session XIV, Draft report continued
16.30 - 16.45	Break
16.45 - 18.00	Session XIV, Closing speech

**INTERREGIONAL PETROCHEMICAL SYMPOSIUM ON THE DEVELOPMENT
OF THE PETROCHEMICAL INDUSTRIES IN DEVELOPING COUNTRIES**

21-31 October 1969, Baku, USSR

FIRST MEETING DAY, TUESDAY 21 OCTOBER 1969

Opening session 9.00-11.00

In the Chair

Presentation of the Symposium staff

UNIDO

Welcome addresses

USSR

1. **Mr. K. A. Guseynov, Deputy Chairman of the Council of Ministers of the AzSSR**
2. **Mr. P. M. Abdullaev, Chairman of the Baku City Executive Committee**
3. **Mr. N. J. Sorokin, Chairman of the Organizing Committee, Deputy Minister of Oil Processing and Petrochemical Industries of the USSR**

Message to Symposium

**Dr. I. H. Abdel-Rahman,
Executive Director, UNIDO**

Election of Chairman

USSR

Election of Vice Chairman

Chairman's address

Session I, Section A, 11.00-13.00

Sectional Chairman: L. Kumar

Co-Chairman: L. E. Zlotin

Technical Rapporteur: H. May

Section A: Present and future prospects of the petrochemical industry

ID/WG.34/3 PET.SYMP.A/1

Introduction:

Developments in the petrochemical industry since 1964 and their interest to developing countries

P. Leprince

FRANCE

ID/WG.34/4 PET.SYMP.A/2

Prospects for the development of the petrochemical industry in Africa

presented by

ECA

Brief papers from participants from African developing countries

Discussion

Session II, Section A, 15.00-18.00

Sectional Chairman: L. Kumar

Co-Chairman: L. E. Zlotin

Technical Rapporteur: H. May

ID/WG.34/5 PET.SYMP.A/3

Development of the petrochemical industry in the ECAFE region

G. S. Apte

ECAFE

ID/WG.34/69 PET.SYMP.A/19

Recent development in the Australian petrochemical industry

R. B. McKern

USA

Brief papers from participants from developing countries of Asia and the Far East

Discussion

ID/WG.34/9 PET.SYMP.A/7

**The basic petrochemical industry
in Latin America**

presented by

ECLA

**Brief papers from participants from
Latin American developing countries
Discussion**

2ND MEETING DAY, WEDNESDAY, 22 OCTOBER 1969

Session III, Section A, 9.00-13.00

Sectional Chairman: L. Kumar

Co-Chairman: L. E. Zlotin

Technical Rapporteur: H. May

ID/WG.34/10 PET.SYMP.A/8

The development of the petrochemical industries in the Middle East region

Brief papers by participants from Middle East developing countries

Discussion

K. M. Czeija

AUSTRIA

ID/WG.34/6 PET.SYMP.A/4

Development of plastics from the petrochemical industry in the COMECON countries and Yugoslavia

Brief papers from participants from COMECON, developing countries and Yugoslavia

Discussion

J. Müller

CZECHOSLOVAKIA

Session IV, Section A, 15.00-18.00

Sectional Chairman: L. Kumar

Co-Chairman: L. E. Zlotin

Technical Rapporteur: E. G. Hancock

ID/WG.34/57 PET.SYMP.A/17

Main trends in the development of the petrochemical industry of the USSR

V. L. Klimenko

USSR

ID/WG.34/8 PET.SYMP.A/6

**Developments in the organic sector
of the European chemical industry**

presented by

ECE

ID/WG.34/7 PET.SYMP.A/7

**Petrochemical development in
North America**

**M. S. Duncan
F. Kaupp
J. Buchet**

USA

ID/WG.34/58 PET.SYMP.A/18

**Development of the petrochemical
industry of the Azerbaijan Soviet
Socialist Republic (AzSSR)**

R. G. Ismailov

USSR

ID/WG.34/12 PET.SYMP.A/10

**Financing petrochemical ventures
in Latin America**

**A. E. Abrahams
W. D. Gersumky**

USA

ID/WG.34/13 PET.SYMP.A/11

**The development of the petro-
chemical industry in Puerto Rico**

**M. H. Gertz
J. L. Walker
P. W. Hawley**

USA

ID/WG.34/71 PET.SYMP.A/21

**Petroleum and petrochemical industry
in the Caribbean region a techno-
economic study**

**H. D. Huggins
G. M. Richards**

**TRINIDAD &
TOBAGO**

Discussion

3RD MEETING DAY, THURSDAY, 23 OCTOBER 1969

Session V, Section A, 9.00-13.00

Sectional Chairman: L. Kumar

Co-Chairman: L. E. Zlotin

Technical Rapporteur: E. G. Hancock

ID/WG.34/14 PET.SYMP.A/12

The transfer of technology for petrochemicals to developing countries

K. M. Czejka

AUSTRIA

ID/WG.34/11 PET.SYMP.A/9

The evaluation of a petrochemical project including methods based on discounted cash flow

P. Braber

THE NETHERLANDS

ID/WG.34/15 PET.SYMP.A/13

New primary feed-stocks supplier accelerates development of large-scale petrochemical industry in Brazil

B. S. Duff

BRAZIL

ID/WG.34/66 PET.SYMP.A/14

The industrialization of developing countries. Problems of professional training and technical assistance with their contractual aspects

J. Pierre

FRANCE

DISCUSSION

Sectional Chairman: L. Kumar

Co-Chairman: L. E. Zlotin

Technical Rapporteur: E. G. Hancock

Discussion on the problems facing petrochemical industry in developing countries and on the type of external technical assistance required, in particular from UNIDO.

Session VI, Section B, 15.00–18.00

Sectional Chairman: E. G. Hancock

Co-Chairman: D. V. Mushenko

Technical Rapporteur: J. Skarka

Section B: Basic petrochemical products and raw materials

ID/WG.34/16 PET.SYMP.B/1

Recent developments in the field of basic petrochemicals and their special interest for developing countries

**P. Leprince
C. Mercier
M. Grimaud**

FRANCE

ID/WG.34/67 PET.SYMP.B/13

Steam-cracking processes

L. Lederer

FRANCE

ID/WG.34/21 PET.SYMP.B/6

Process for the production of petrochemical basic building blocks

**H. K. Kamptner
O. Reitz
W. Krönig
H. Höfermann
W. Munde
presented by
H. K. Kamptner**

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REPUBLIC OF
GERMANY**

ID/WG.34/22 PET.SYMP.B/7

Comparison of processes for the production of aromatics

R. Fowler

**UNITED
KINGDOM**

ID/WG.34/18 PET.SYMP.B/3

The small-scale production of ethylene with special reference to the disposal of co-products

G. Hardy

HUNGARY

ID/WG.34/17 PET.SYMP.B/2

Production of petrochemicals from petroleum and natural gas under the local conditions of developing countries

M. Gerhold

AUSTRIA

ID/WG.34/20 PET.SYMP.B/5

Processes for the production of
petrochemical intermediates

W. Krönig

O. Reitz

H. Höfermann

H. K. Kamptner

W. Munde

presented by W. Krönig

FEDERAL
REPUBLIC OF
GERMANY

4TH MEETING DAY, FRIDAY 24 OCTOBER 1969

Session VII, Section B, 9.00 13.00

Sectional Chairman: E. G. Hancock

Co-Chairman: D. V. Mushenko

Technical Rapporteur: J. Skarka

ID/WG.34/19 PET.SYMP B/4		
Mathematical modelling of the development of petrochemistry	M. Preisich	HUNGARY
ID/WG.34/53 PET.SYMP.B/11		
Chemicals from coal	B. W. Struth	USA
ID/WG.34/54 PET.SYMP.B/12		
Chemicals from hydrocarbons by the fermentation process	S. Kinoshita T. Suzuki presented by T. Suzuki	JAPAN
ID/WG.34/59 PET.SYMP.B/10		
Production of surface active agents on the base of synthetic fatty alcohols	A. G. Reznikov	USSR
ID/WG.34/60 PET.SYMP.B/9		
New methods for the production of diphenyl-propane, divinyl-benzene, glycidol and synthetic glycerine	A. G. Menyailo	USSR
ID/WG.34/23 PET.SYMP.B/8		
Outlook for propylene in Western Europe, Japan and USA	N. E. Ockerbloom	USA
Discussion		

Session VIII, Section C, 15.00-18.00

Sectional Chairman: R. M. Kossoff

Co-Chairman: A. P. Pashkov

Technical Rapporteur: K. M. Czeija

Section C: Plastics

ID/WG.34/25 PET.SYMP.C/1

Developments in the plastics industry since 1964 and their special interest for developing countries

M. Grimaud
J. Aboulafia
D. Wyseur

FRANCE

ID/WG.34/52 PET.SYMP.C/13

Vinyl chloride monomer

M. Antonini

FRANCE

ID/WG.34/34 PET.SYMP.C/10

Present situation in the development of high-pressure polyethylene production

K. H. Imhausen

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REPUBLIC OF
GERMANY**

ID/WG.34/35 PET.SYMP.C/11

Recent technological developments in the production of polyolefins

G. Crespi
A. Valvassori
presented by
G. Crespi

ITALY

ID/WG.34/36 PET.SYMP.C/12

The polymerization, structure and properties of bulk PVC in comparison with suspension PVC

F. Berger

FRANCE

ID/WG.34/28 PET.SYMP.C/4

New polymers

R. M. Kossoff

USA

ID/WG.34/61 PET.SYMP.C/15

Latest achievements in the synthesis of polymeric reagents and their application

A. P. Pashkov

USSR

ID/WG.34/31 PET.SYMP.C/7

**The petrochemistry of high-
temperature-resistant polymers**

**H. Mark
S. Atlas**

USA

Discussion

5TH MEETING DAY, MONDAY 27 OCTOBER 1969

Session IX, Section C, 9.00–13.00

Sectional Chairman: R. M. Kossoff

Co-Chairman: A. P. Pashkov

Technical Rapporteur: K. M. Czeija

ID/WG.34/26	PET.SYMP.C/2		
Polystyrene for every nation	R. B. Bishop	USA	
ID/WG.34/29	PET.SYMP.C/5		
Relative marketability of polyvinyl chloride, polystyrene, and polyethylene in developing countries	M. Gerhold	AUSTRIA	
ID/WG.34/32	PET.SYMP.C/8		
Factors to be taken into account by a developing country in deciding entry into the thermoplastics industry	W. J. Marmion	UNITED KINGDOM	
ID/WG.34/30	PET.SYMP.C/6		
The importance of the application of plastics in developing countries	H. Tschamler	AUSTRIA	
ID/WG.34/27	PET.SYMP.C/3		
The application of plastics in agriculture (including horticulture)	A. D. Clarke	UNITED KINGDOM	
ID/WG.34/51	PET.SYMP.C/14		
Radiation processing of petrochemicals and plastics	presented by	IAEA	
Discussion			

Session X, Section D, 15.00-18.00

Sectional Chairman: A. Shah Nawaz

Co-Chairman: A. B. Pashkver

Technical Rapporteur: R. M. Kossoff

Section D: Synthetic fibres

- | | | |
|---|---|--------|
| ID/WG.34/37 PET.SYMP.D/1 | | |
| Developments of the synthetic fibre industries since 1964 and their special interest for developing countries | M. Barraqué
D. Wyseur | FRANCE |
| ID/WG.34/44 PET.SYMP.D/8 | | |
| The importance of the photo-nitrosation process in the production of nylon-6 monomer | Y. Ito | JAPAN |
| ID/WG.34/62 PET.SYMP.D/11 | | |
| Continuous process of producing synthetic fibres from E-caprolactam | V. M. Kharitonov | USSR |
| ID/WG.34/40 PET.SYMP.D/4 | | |
| Competition between polyesters and nylons and their future prospects | Technical Committee of Japan Chemical Fibre Association
presented by
T. Betsuno | JAPAN |
| ID/WG.34/55 PET.SYMP.D/9 | | |
| New polyvinylchloride fibres | C. Mazzolini | ITALY |
| ID/WG.34/38 PET.SYMP.D/2 | | |
| Polyvinyl alcohol fibres (vinylon) | Technical Committee of Japan Chemical Fibre Association
presented by
T. Betsuno | JAPAN |

ID/WG.34/39 PET.SYMP.D/3

Petrochemistry and technology
of web formation

**H. Mark
K. M. Czejka**

**USA
AUSTRIA**

ID/WG.34/42 PET.SYMP.D/6
Silk-like fibres

**Technical Com-
mittee of Japan
Chemical Fibre
Association
presented by
T. Betsuno**

JAPAN

ID/WG.34/56 PET.SYMP.D/10

Petrochemistry and the man-made
fibre industry in the developing
countries

E. E. Braunsteiner AUSTRIA

ID/WG.34/41 PET.SYMP.D/5

Low cost floor coverings from
polypropylene fibres

C. Caldo

ITALY

Discussion

6TH MEETING DAY, TUESDAY 28 OCTOBER 1969

Session XI, Sections D and E, 9.00 - 13.00

Section D: Synthetic fibres

Sectional Chairman: A. Shah Nawaz

Co-Chairman: A. B. Pashkver

Technical Rapporteur: R. M. Kossoff

Continuation of discussion on the fibre section

Section E:

Sectional Chairman: R. Schiffino

Co-Chairman: A. P. Troitsky

Technical Rapporteur: H. May

Section E: Synthetic rubber

ID/WG.34/54 PET.SYMP.E/1

Developments in the synthetic rubber industry since 1964 and their special interest to developing countries

F. Vachez

FRANCE

ID/WG.34/46 PET.SYMP.E/2

A selection of processes for the manufacture of polymer products, particularly of synthetic rubber

**H. K. Kamptner
W. Munde
H. Höfermann
O. Reitz
W. Krönig
presented by
H. Höfermann**

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GERMANY**

ID/WG.34/49 PET.SYMP.E/5

Synthetic lattices, research with a commercial approach

P. G. Ridgewell

**UNITED
KINGDOM**

ID/WG.34/63 PET.SYMP.E/7

**Production of isoprene and
isoprene rubbers**

**A. S. Estrin
S. K. Ogorodnikov
O. E. Batalin**

USSR

Session XII, Section E, 15.00-18.00

Sectional Chairman: R. Schiffino

Co-Chairman: A. P. Troitsky

Technical Rapporteur: H. May

ID/WG.34/48 PET.SYMP.E/4

**Merits of the newer rubbers for
developing countries**

**R. S. Hamer
J. M. Short
L. V. Howenstine
presented by
L. V. Howenstine**

USA

ID/WG.34/64 PET.SYMP.E/8

**Technical and economic back-
ground for the organization of
synthetic rubber production
in developing countries**

**A. P. Troitsky
A. P. Nikandrov**

USSR

ID/WG.34/50 PET.SYMP.E/6

**The economics of establishing
synthetic rubber factories
in developing countries**

R. Lamberson

USA

ID/WG.34/47 PET.SYMP.E/3

**The establishment of rubber
manufacturing in developing
countries**

**J. Simon
A. F. Brazier
presented by
J. Simon**

**UNITED
KINGDOM**

Session XII, Section E, 15.00-18.00 (cont'd)

ID/WG.34/65 PET.SYMP.E/9

**Technical and economic results
and perspectives of the application
of synthetic rubber in the tire
industry**

**F. I. Yashunskaya USSR
E. A. Kaganovskaya**

Discussion

7th MEETING DAY, FRIDAY, 31 OCTOBER 1969

Session XIII, 9.00 - 10.45

Sectional Chairman: M. C. Verghese

Technical Rapporteur: H. May

Prospects of the Petrochemical Industry for the Second Development Decade

11.00-13.00

Chairman

Discussion of the draft report on Symposium and discussion on problems encountered by developing countries in petrochemical development and suggested remedies including assistance by UNIDO.

Session XIV, 15.00 - 18.00

Chairman

Discussion of the draft report on Symposium and discussion on problems encountered by developing countries in petrochemical development and suggested remedies including assistance by UNIDO. (cont.)

Closing speeches





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