

Princeton University DEPARTMENT OF CHEMISTRY

PRINCETON, NEW JERSEY 08540

December 6, 1973

Dr. Royal Wald
SCI-SA, Room 3830
State Department
Washington, D.C. 20520

Dear Dr. Wald:

I am sending by separate mail two samples to be transmitted to Dr. Tech of the U.S. Embassy, Moscow, for Dr. Krylov of the Institute of Chemical Physics. The samples can be looked at. They are essentially neutral water with a slight amount of platinum and gold particles. There is no danger of breakage. If there is any leakage, it will be picked up by the porous surrounding material. These samples will be transmitted by Dr. Krylov to Dr. Sokolski of the Institute of Physical Chemistry at Alma Ata.

Thank you for your courtesy in this matter.

Sincerely yours,



John Turkevich

JT:dhl

Encs.

cc: Dr. T. W. DeWitt, NSF
Dr. E. D. Stevenson, AEC
Prof. W. Keith Hall
Dr. Baldeschwieler

State Dept. declassification & release instructions on file

DEPARTMENT OF STATE TRANSMITTAL SLIP		CLASSIFICATION UNCLASSIFIED
		DATE 12/19/73
TO Amembassy MOSCOW		For the Attention of SCIATT
FROM Department of State		
TO THE FOREIGN SERVICE		TO THE DEPARTMENT
<input checked="" type="checkbox"/> For Transmittal to Addressee at the Discretion of Post <input type="checkbox"/> Post Information Only <input type="checkbox"/> Transmit to Foreign Office <input type="checkbox"/> Submit Report <input type="checkbox"/> Reply to the Individual		<input type="checkbox"/> Dept. Information Only <input type="checkbox"/> CERP Publications <input type="checkbox"/> Enclosure to Previous Airgram <input type="checkbox"/> Reply to Department Request
<input type="checkbox"/> Transmit to: (U. S. Agency) <input type="checkbox"/> Inform:		
REFERENCE		
ITEMS/REMARKS		
<p>Letter to Professor O.V. Krylov fr. John Turkevich, 12/6/73. & package.</p> <p>Please initial and return.</p> <p>Registry No. 813735</p>		
IN REPLY REFER TO FILE NUMBER AND DRAFTING OFFICE		
FILE NO.	SIGNATURE Royal Wald	
CLASSIFICATION UNCLASSIFIED	OFFICE SCI/SA	

Chem. Catalysts
 Items III
 Indepth studies
 of Selected Catalysts
 Systems

Chemical Catalysts

FORM 12-64 DS-4

☆ U.S. GOVERNMENT PRINTING OFFICE : 1973-725-341/417 3-1

OSI ✓
Ellie ✓
OER ✓
file (Chem Catal) ✓
Commerce ✓
SB ✓
file - Chem Catal ✓
3 mil ✓
GSS ✓

Princeton University DEPARTMENT OF CHEMISTRY

PRINCETON, NEW JERSEY 08540

December 6, 1973

Professor O. V. Krylov
Deputy Director
Institute of Chemical Physics
USSR Academy of Sciences
Vorob'evskoye shosse, 2
Moscow, USSR

• Dear Oleg Valentinovich:

I just received your letter of October 26 via the State Department. It seems to take them longer than by direct communication. I am sending this letter to you directly and a copy for transmission by the State Department. I am also sending via the State Department two samples of colloids: one of gold 200Å, and another of platinum for transmission by you to Prof. Sokolski at Alma Ata. These samples are monodisperse and have been well characterized by us. He had been planning to do some electrochemical experiments on them. If Professor Gryaznev wishes some platinum or gold colloids, we shall be able to furnish him also with these.

We are in the process of preparing 10% dispersion of gold 200Å and of platinum 30Å, in the following: gelatin, polyvinyl alcohol and polyacrylic acid. We have found by color observation that the gold is not coagulant on evaporation. These materials can be used for preliminary work on Mössbauer effect, small angle x-ray scattering and wide angle x-ray line shapes. Once these preparations are finished we are going to do the same thing for platinum.

We have looked at the catalytic nature of platinum particles on Baymol (fibrous alumina) and have indications that in our simple preparation the platinum particles are clustered. We have used gold as a test colloid and are developing techniques in which the gold seems to remain dispersed without coagulation on the Baymol.

Catalytic samples of ethylene, propylene, cyclohexene, and benzene gave us on poisoning about 10% of the surface atoms of platinum. We do not know yet whether this number represents the fraction of platinum atoms that are active or is due to a decrease in area due to clusters and sintering. It is of interest, however, that the number of centers for ethylene hydrogenation is the same as for hydrogen deuterium exchange.

December 6, 1973

I learned that Professor Gryaznev's group did not come to the United States in November. As I mentioned before, I shall be very happy to see you, Professor Gryaznev and other Soviet colleagues at Princeton.

Enclosed please find a spectrum of the materials.

With best wishes to yourself and to Zenida Leonidovna,
I am

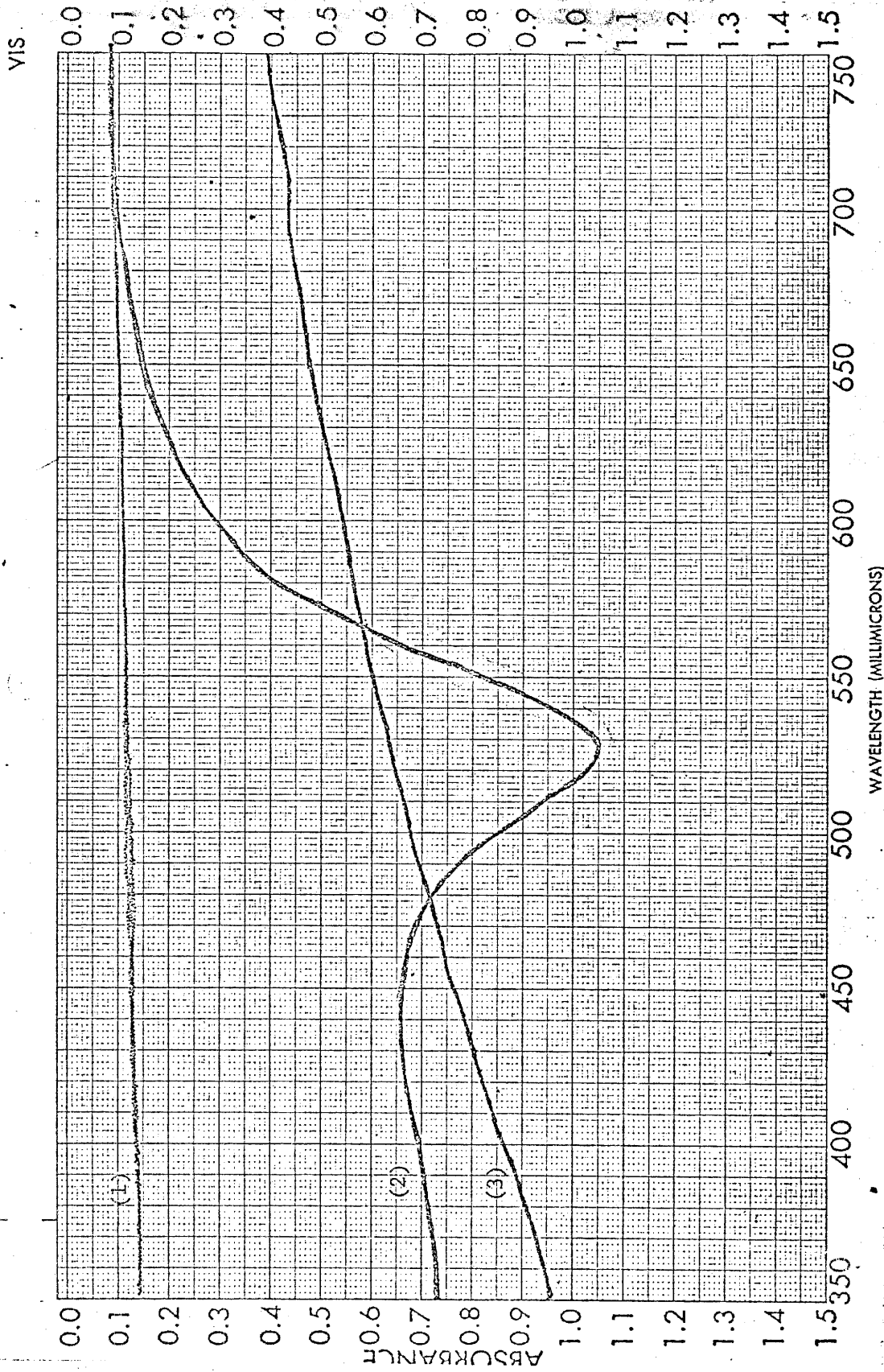
Sincerely yours,

John Turkevich

JT:dhl

Enc.

cc: Dr. Royal Wald, State Department
Dr. T. W. DeWitt, NSF
Prof. W. Keith Hall
Dr. E. Dee Stevenson, AEC
Prof. J. D. Baldeschwieler, Cal. Tech.



(1) background, (2) gold colloid, (3) platinum colloid

October 11, 1973

Professor O. V. Krylov
Deputy Director
Institute of ~~Physical Chemistry~~ Chemical Physics
USSR Academy of Sciences Vorob'evskoye shosse, 2
Moscow, USSR

Re: Item 3, An In-depth Study of Selected Catalyst Systems

Dear Oleg Valentinovich:

It is over a month since we have been in the Soviet Union and I would like to thank you and your colleagues for the wonderful hospitality that you offered me and for the opportunity both to exchange views on programs and to lay plans for the future. It was unfortunate that the number of laboratory visits was not as extensive as one could hope, but then I hope to come in the spring in order to continue scientific discussions and visit laboratories. I am looking forward to receiving you and your colleagues at Princeton this fall or early winter. I would like to implement in more detail the program for which I am responsible. It is my understanding that I am to prepare metallic catalysts, platinum, palladium, gold, and alloys of uniform size to be used as standards for investigation of hydrogenation and to characterize them by their physical properties and catalytic activity.

With this as the basis for scientific collaboration, I propose the following specific items.

1) Send to Prof. Sokolovsky at Alma Ata samples of colloidal platinum and gold for electrochemical investigation. I will send the solutions in polythene flasks to you through the diplomatic pouch.

2) I have received from Dr. Gryaznev the reprints on his membrane catalysis work and a bibliography of American work. I am planning to study it, investigate the availability of American-made membranes and to devise means of placing the finely-divided platinum on those membranes.

3) I am proposing to send to the Institute of Chemical Physics
Approved For Release 2000/08/31 : CIA-RDP79-00798A000300020006-7
Mr. Leonor Iton for the period of April, May and June. Mr. Iton is an excellent experimentalist whose speciality has been ESR study of hydrogen atoms in solids and rare earths

Prof. O. V. Krylov

- 2 -

October 11, 1973

in zeolites. He will bring samples of gold and gold and platinum alloys of uniform size and of varied size. I am proposing that he investigate them at your Institute, using either the Mossbauer effect or any other technique that you feel can be carried out effectively for characterizing these materials.

4) I shall be very happy to accept from your Institution a scientist for a period not exceeding six months to work either on the preparation of these materials or their characterization by chemiluminescence, ESR and NMR techniques or by kinetic studies..

5) I am free this spring term, having a sabbatical leave. I shall be leaving Princeton the last week in January for two months in Japan. I would like to come back via the Soviet Union in April and stay for two weeks to further implement the scientific collaboration.

With best personal regards to yourself and to Mme. Krylov and colleagues, and looking forward to seeing you and your colleagues in Princeton, I am

Sincerely yours,

John Turkevich

JT:dhl

cc: Prof. W. Keith Hall
Dr. T. W. DeWitt, NSF
Dr. E. D. Stevenson, AEC