

1968
Quest. for
position at
UNIV. of Utah

via

College of Engineering
Materials Science

SOSIN
Williams
and

Inst. Biomedical Engineering
Div. of Artificial Organs

WJ Kolff

also letter of
recommend & correspondence
on
D J Lyman - 1968



THE UNIVERSITY OF UTAH

SALT LAKE CITY

January 14, 1969

JAMES C. FLETCHER
PRESIDENT

Professor Joseph D. Andrade
Department of Mechanical Engineering
Merrill Engineering Building
Campus

Dear Professor Andrade:

It is a pleasure for me to inform you that the Board of Regents has confirmed your appointments as Assistant Professor of Materials Engineering in Mechanical Engineering and Research Instructor in Surgery, effective January 1, 1969.

We certainly hope that you will enjoy your work here at the University of Utah.

Sincerely,

A handwritten signature in cursive script, appearing to read "James C. Fletcher".

President

JCF:no



THE UNIVERSITY OF UTAH
COLLEGE OF MEDICINE

DEPARTMENT OF SURGERY

SALT LAKE CITY 84112

October 23, 1968

Bldg. 512

DIVISION OF ARTIFICIAL ORGANS

WILLEM J. KOLFF, M.D., Ph.D.

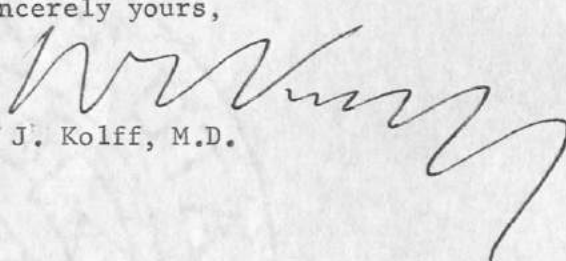
Chairman/Professor of Surgery

Dr. Joe Andrade
2250 South Ogden Street
Denver, Colorado 80210

Dear Dr. Andrade:

I am delighted that you have accepted. I will be in favor of sending you out for a short apprenticeship with Dr. Falb. I am looking forward to the time of our cooperation.

Sincerely yours,


W. J. Kolff, M.D.

WJK/jb

cc: Dr. A. Sosin

2250 South Ogden
Denver, Colorado
December 11, 1968

Dr. A. Sosin, Head
Division of Materials Science
and Engineering
University of Utah
Salt Lake City, Utah

Dear Dr. Sosin,

I first met Don Lyman at the Wisconsin Engineering Institute in Biomedical Materials in April, 1966. He was enrolled as a "student" with the rest of us. This was several days after the annual meeting of the American Society for Artificial Internal Organs; he was program chairman for that meeting. The quality that immediately impressed me was his great friendliness. He is extremely personable and easy to talk to. In addition, he has the unique ability to transmit information clearly and almost effortlessly. I have heard him speak four times. Each time the talk was well organized and beautifully presented. He has taught at Stanford and at San Jose (California) State College; he is interested in teaching.

He has made a very significant contribution in the development of polymers with unique permeability properties - the ability to literally discriminate between very similar molecules by means of partitioning. These materials will no doubt find their way into artificial kidney applications, drug delivery systems, and membrane models. He is a recognized expert in dialysis, and he has lectured to various groups in Europe on the subject. He was chairman the dialysis session at the International Conference on Medical and Biological Engineering last August in Stockholm. He was to have gone to Russia this past summer as a guest of the Soviet Academy, but the Czechoslovakian crisis forced a postponement of the trip.

He is also a recognized expert on blood-polymer interactions and blood clotting. Though he has only published two papers in this area, both of them are classics. His 1965 paper was the first attempt to relate blood coagulation to a fundamental property of surfaces, i.e., surface free energy. His 1968 paper has opened the way for a new approach to blood coagulation theories; it casts a great deal of doubt on the current theories of surface-induced coagulation.

He is completing a book (Biomedical Polymers - McGraw-Hill) which will be the first volume ever published in its subject area and which will probably contain much previously unpublished work. No doubt it will be the standard, text, reference, and classic for many years to come.

Dr. Lyman is well known and respected in biomedical circles and to the N.I.H. He has succeeded in maintaining and expanding his funding in these lean years. He is also

2250 South Ogden
Denver, Colorado
1968

on the editorial advising staff of the Journal of Biomedical
Materials Research.

I must add that I may be biased. Don is one of the two people who have most influenced me in my graduate work, primarily because of his 1965 paper relating blood coagulation to surface free energy. I am not very familiar with his dialysis work, but it is quite evident that his work is the foundation of a truly scientific approach to membrane development and understanding. I don't know how many papers he has published, but I do know he has made a fundamental contribution to the understanding of the bulk properties of polymers (permeability) as well as to polymer surface properties (adsorption).

If you have any specific questions, please ask them.

Have a happy Christmas. I can't wait to arrive and get started.

Sincerely,

UNDER
OF CHRISTIANS
THE CONDITION

2250 South Ogden Street
Denver, Colorado 80210
October 15, 1968

Dr. A. Sosin
Division of Materials Science and Engineering
College of Engineering
University of Utah
Salt Lake City, Utah 84112

Dear Dr. Sosin,

Thank you for your letter with Dr. Kolff and the formal offer. I enthusiastically accept!

The work here is progressing though not quite as rapidly as I'd hoped. I am in the process of writing now, and data is still coming in. I am still hoping to have it completed and defended by January.

During our telephone conversation you asked me to briefly outline how I might employ a scanning electron microscope (SEM) if one were available on campus. I had hoped to survey the literature and come up with some concrete and practical possibilities but, unfortunately, I still haven't done that. I have briefly examined some review books and papers on the SEM. I might use one in the following ways:

1. Direct examination of the surface topography of crystalline polymers. The fairly good resolving power of the SEM (100-200Å) might permit direct observation of polymer lamella. The brochure on the JSM-2 SEM has several photographs of micro-spherulites and shows some of the possibilities. A very recent example of a practical application of the SEM for the study of polymer surfaces is reported in Chemical and Engineering News, 9/23/68, p. 60. This was a study of the relationship of polymer surface topography to tissue adhesion in surgical implants. I expect to continue some of my work on the chemical modification of polymer surfaces. The SEM could be used to learn how the surface topography changes with the various chemical treatments. This is a largely unexplored area, particularly for such treatments as proteination and heparinization. I would also like to study some aspects of substrate effects on polymer morphology. The SEM would be used to characterize both the substrate and the resultant polymer.

2. Surface roughness and porosity of materials for artificial joints and valves. This is an area I know little about but have become interested in, as lubrication, friction, and wear are persistent problems in the use of artificial joints. The interaction between synovial fluid and foreign materials is also largely unexplored.
3. Study of potential variations on surfaces. The electrical nature of a surface will greatly affect its surface properties. Most of the techniques for measuring surface potential are macroscopic in nature. The SEM might allow one to measure potential variations in a surface due to precipitates, grain boundaries, and dislocations. This might be correlated with adsorption properties, possibly by microautoradiography or fluorescence microscopy.
4. Biological applications: Because of the surface conductivity problem it would be difficult to study biological materials directly. I might be able to do something with protein adsorption by binding ferritin, a small iron-containing molecule, to the protein. If there is a significant difference in backscattering between the ferritin region and the remainder of the surface, adsorption effects might be detectable. Studies of cellular interaction with polymers would probably be feasible, e.g. hemolysis and platelet adsorption.

As I learn more about the potentialities of the SEM, many more applications will become evident. The most important application would be to see the surfaces of solids - up to over 100,000 X. I think it will be much more satisfying to deduce adsorption and coagulation models and theories if one can see deep down into the surface. To my knowledge, the SEM is the only instrument capable of doing this. I am sure I would use it a great deal.

Does the university provide a moving allowance? Will I be expected to teach anything during the winter quarter (January-March)? Your letter answered the other questions I had.

I am very much looking forward to working with you and Dr. Kolff and the faculty and staff of both divisions.

Thank you.

Sincerely,

cc: Dr. W. J. Kolff



THE UNIVERSITY OF UTAH

SALT LAKE CITY 84112

COLLEGE OF ENGINEERING

DIVISION OF MATERIALS SCIENCE
AND ENGINEERING

9 October 1968

Mr. J. D. Andrade
2250 Ogden
Denver, Colorado

Dear Joe:

Following the content of our recent conversation, we are pleased to offer you a dual position as an Assistant Professor of Materials and as an Assistant Research Professor of Surgery in the Division of Artificial Organs. Your salary would be \$9,000 per academic year, subject to department and College approval, shared equally by the Materials Division, College of Engineering and by the Division of Artificial Organs, Department of Surgery. In this position, your duties would include teaching in the curriculum of the Materials Division with primary emphasis in the area of biomedical materials and phenomena and research activities in this area of the materials field. In your research, it would be expected that you would conduct an activity within the College of Engineering as well as working directly with the Division of Artificial Organs. We hope and believe that you will be able to select your research so that these two operations will reinforce each other and will assist you in performing a function which we regard as particularly important--enabling the staff members of the Materials Division and of the Division of Artificial Organs to communicate freely and cooperate profitably.

You will be eligible for our TIAA-CREF annuity program in which the University will withhold 5% of your salary and match it with an additional 5% which effectively results in a 4% greater salary. This is an outstanding retirement program used by most universities in the country. We also have health insurance, etc.

Consulting by faculty members is encouraged within the limitations of the Faculty Regulations, which permit consulting two days a month. Faculty members may receive an additional one third of their salary for work on sponsored research during the summer.

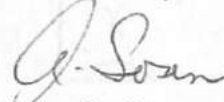
This offer is subject to approval by our Central Administration. If you have questions, please do not hesitate to call me collect.

Mr. J. D. Andrade
9 October 1968

page 2

We look forward to your association with the Materials Division and with the Division of Artificial Organs and are prepared to answer any questions you may presently have and to assist you in establishing meaningful and valuable teaching and research developments on this campus.

Sincerely,



A. Sosin
Division of Materials
Science and Engineering



W. J. Kolff
Division of Artificial
Organs

AS:jb

2250 South Ogden Street
Denver, Colorado 80210
October 15, 1968

Dr. W. J. Kolff
Division of Artificial Organs
Department of Surgery
College of Medicine
University of Utah
Salt Lake City, Utah 84112

Dear Dr. Kolff,

Thank you for your letter with Dr. Sosin and the formal offer.
I enthusiastically accept!

My thesis work has run into a few problems but I still hope
to have it finished by January.

I will arrive with a good collection of literature on heparin-
ization and proteination. I expect that some of that work
could begin relatively soon after I arrive, along with some
of the current surface studies. After becoming thoroughly
familiar with the heparinization treatment and the problems
involved, it might be worthwhile to approach Dr. Falb about
a short apprenticeship, if that is feasible.

I am very much looking forward to arriving and working with
the two divisions.

Thank you.

Sincerely,

cc:Dr. A. Sosin

DOW CORNING CENTER FOR AID TO MEDICAL RESEARCH

Midland, Michigan 48640 U.S.A.

Telephone 517 636-8980

October 23, 1968

Mr. J. Andrade
2250 South Ogden Street
Denver, Colorado 80210

Dear Joe:

I have written to Dr. Kolff and Dr. Sosin at Utah and I enclose a copy of my letters.

Thank you very much for the references you sent. They were exactly what I needed.

I certainly wish you the best of luck. I was very much impressed with Salt Lake when I visited there last year; it looks like it would be a very fine place to live.

Sincerely yours,



Silas Braley
Director

SB:ML
Enclosures: as stated
Signed in Mr. Braley's absence.

bcc: J. Andrade ✓

October 23, 1968

Dr. W. J. Kolff
Division of Artificial Organs
Building 512
College of Medicine
University of Utah
Salt Lake City, Utah 84112

Dear Dr. Kolff:

Mr. Joseph Andrade has asked me to write you on his behalf concerning his background.

I have known Mr. Andrade since he first contacted us several years ago in his attempts to obtain all possible data on work done in biomedical materials. Since that time he has consistently followed this interest. I meet him at many of the biomedical material meetings and am consistently impressed with the wide knowledge he has acquired in this area. As far as I can determine, there are no important and few unimportant references that he is not aware of and can quote.

Mr. Andrade has a good background in the science of materials and his continuing interest in the rapidly increasing field of the biomedical applications should make him a very valuable member of any materials science and engineering group.

Sincerely yours,

Silas Braley
Director

SB:ML

Signed in Mr. Braley's absence.



THE UNIVERSITY OF UTAH
 COLLEGE OF MEDICINE
 DEPARTMENT OF SURGERY
 SALT LAKE CITY 84112

September 6, 1968

DIVISION OF ARTIFICIAL ORGANS

WILLEM J. KOLFF, M.D., Ph.D.
 Chairman/Professor of Surgery

Mr. Joe Andrade
 2250 South Ogden Street
 Denver, Colorado 80210

Dear Mr. Andrade:

I feel terrible that I have not written you sooner. Enclosed you will find a photocopy of a letter from Professor Sosin. Furthermore, the salary that I quoted of \$9,000 would be for the academic year, in other words your salary would be \$12,000 annually. It would be agreeable with me if you prefer to split 50 - 50. The Division of Artificial Organs will be pleased to pay \$6,000 of your salary to be paid from the Kidney Development Contract. I have cleared this with Dr. Heim, who is the NIH officer in charge of the kidney contract.

I will now ask Dr. Reemtsma to support your appointment as a member of the staff of the Division of Artificial Organs in the Department of Surgery. We will ask Dr. Reemtsma also to give you the appropriate academic appointment,

I would like to end this letter by expressing the hope that you will come and I will do whatever is possible to make your work pleasant and scientifically rewarding and also to contribute to your happiness in Salt Lake both for you and your wonderful family.

Sincerely,

W. J. Kolff
 W. J. Kolff, M. D.

WJK/bwh

Enclosure

*Reemtsma
 Letter
 Rec
 Dr. Sosin*

UNIVERSITY OF UTAH
COLLEGE OF ENGINEERING
MEMORANDUM

TO: W. J. Kolff

DATE: 2 September 1968

FROM: A. Sosin

RECEIVED

SEP 04 1968

Div. of Artificial Organs

SUBJECT: Appointment of Joseph D. Andrade

Concerning our conversation regarding Andrade, the reaction within the Materials Division appears to be quite favorable. A more formal consideration of this candidate in a regular divisional meeting is scheduled shortly.

I would suggest that proceeding further toward engaging Andrade is in order. The split suggested by you (70%-30%) is unusual in that all of our materials faculty are either 100% or 50%-50%. This might give rise to concern on the part of the materials faculty. However, I believe that a statement from Andrade concerning his choice here would be accepted.

We would appreciate receiving Andrade's transcripts, letters of recommendation and other related information for our Division meeting.

AS:jb

2250 South Ogden Street
Denver, Colorado 80210
September 10, 1968

Dr. W. J. Kolff
Division of Artificial Organs
Building 512
Department of Surgery
College of Medicine
University of Utah
Salt Lake City, Utah 84112

Dear Dr. Kolff:

Thank you for your letter of September 6 and thank you for the very exciting and informative conversations, discussions, and tours.

I am very happy to hear that a joint appointment appears to be very promising; a 50%-50% appointment would be ideal.

I have contacted the University of Denver, San Jose State College, and the University of California. Transcripts of all my college work will be sent directly to you and to Dr. Sosin.

I trust that you have a letter of recommendation in my behalf from Dr. Predecki, my thesis advisor. I am contacting Dr. Donald Lyman, Polymer Science Department, Stanford Research Institute, and Silas Braley, Director of Dow Corning's Center for Aid to Medical Research, and am requesting that they write letters of recommendation to you and Dr. Sosin in my behalf. There may be some delay in receiving these, as Silas Braley is constantly on the move, and Dr. Lyman is presently in Russia on a scientific tour.

A joint appointment at Utah would be very challenging and rewarding for me. I will accept it if it is offered. I feel I could make a strong contribution to both artificial organs and basic materials science and engineering.

Thank you for your consideration and attention.

Sincerely,

Joe Andrade

cc:Dr. A. Sosin

2250 South Ogden Street
Denver, Colorado 80210
September 10, 1968

Silas Braley, Director
Dow Corning Center for Aid to Medical Research
Midland, Michigan

Dear Si,

My work on protein adsorption by crystalline polymers is finally producing some interesting results. I hope to complete my thesis and graduate soon.

I recently interviewed with Dr. Kolff at Utah and also with the Division of Materials Science at the University of Utah. A joint appointment appears very promising with Dr. Kolff and with the engineering (materials) people. For a person with my background and interests such a position is ideal.

Would you write a letter of recommendation in my behalf to Dr. Kolff and Dr. Sosin, head of the materials group? I would appreciate it very much. The letters need not be different. The addresses are:

Dr. W. J. Kolff
Division of Artificial Organs - Bldg. 512
Department of Surgery
College of Medicine
University of Utah
Salt Lake City, Utah 84112

Dr. A. Sosin
Division of Materials Science and Engineering
College of Engineering
University of Utah
Salt Lake City, Utah 84112

Were the polymer references I sent what you had in mind?

Thank you for your help and attention.

Sincerely,

Joe Andrade

2250 South Ogden Street
Denver, Colorado 80210
September 10, 1968

Dr. Donald J. Lyman
Polymer Sciences Division
Stanford Research Institute
Menlo Park, California

Dear Don,

Perhaps by now you've returned from Russia. What was the reaction there to the invasion of Czechoslovakia? I imagine you found things a bit tense and exciting.

Barb, Tonio, and I spent a very exciting few days in Salt Lake City where I interviewed with Dr. Kolff and Dr. Sosin, head of the Division of Materials Science and Engineering. Things look very promising for a 50-50 joint appointment - half-time in Dr. Kolff's group and half-time as a faculty member in materials. I was very impressed by the interdisciplinary communication at Utah - everyone seems committed and interested in bioengineering and the furthering of interdisciplinary work. Considering my background and interests, such an appointment would be ideal.

Would you write a letter of recommendation in my behalf to Dr. Kolff and Dr. Sosin? They need not be different letters. The addresses are:

Dr. W. J. Kolff
Division of Artificial Organs - Bldg. 512
Department of Surgery
College of Medicine
University of Utah
Salt Lake City, Utah 84112

Dr. A. Sosin
Division of Materials Science and Engineering
College of Engineering
University of Utah
Salt Lake City, Utah 84112

I've been getting some interesting results on protein adsorption as a function of polymer crystallinity. The work is progressing nicely.

Hope to see you again soon. Stop over sometime on one of your many trips east or west.

Thank you.

Sincerely,

Joe Andrade

2250 South Ogden Street
Denver, Colorado 80210
August 25, 1968

M. L. Williams, Dean
College of Engineering
University of Utah
Salt Lake City, Utah 84112

Dear Dean Williams:

Thank you for your letter of August 21. I meant to leave the notes with you but forgot in the rush. The notes are enclosed. There was only one hand-out after the second day - Dr. Solomons passed out some material on his work on the mechanical and biochemical properties of bone.

I wish we could have had a few more minutes to talk. We didn't communicate very well.

I am a materials scientist whose speciality is biomaterials - not polymers, or polymer morphology, or polymer deformation - and not just Dr. Kolff's type of materials. The plastics--blood area is my area of experience and major knowledge, but before deciding on it I surveyed the entire spectrum of materials in medicine. To give you an idea of the extent of that survey, I am enclosing the outline and chapter summaries of a book I was working on. (Please pass it on to Dr. Sosing when you are through with it.) The reason I didn't continue with it was because I knew it would delay my thesis for two years or more. I still want to write it.

In addition to biomaterials I would like to study adsorption on high energy surfaces, with emphasis on grain boundaries and dislocation intersections -- with the goal of hopefully shedding some light on catalysis mechanisms and possibly on corrosion processes.

I am interested in solid surfaces, particularly their chemical properties, and especially their interactions with a biological environment. As time goes on these interests will change or at least broaden -- this is something I cannot predict. I am sure that I will never become stagnant or overconfident. If the experts are not available at Utah, then I will seek them out at conferences and by letter -- just as I have done in Denver.

I would like to serve as liason between the materials people and the medical community, not only with Dr. Kolff but with other medical specialities as well, particularly orthopedics. I have discussed this with Dr. Kolff and he agrees, though he has his definite goals and wants me to contribute towards attaining them. We were able to talk quite frankly and openly.

There could be problems. Dr. Kolff will feel I'm spending too much time teaching and writing "long-hair" papers while you and Dr. Sosin may feel I'm spending too much time watching sheep operations -- and there could be some horn-locking. But I'm confident that those would be minor problems. I've never had much trouble with public relations.

I am young, no doubt naive, inexperienced, and a bit idealistic -- but I am also quite sure we could all make it work. The potential is too great not to try.

Thank you for a most exciting visit.

Sincerely,

Joe Andrade
Joe Andrade

cc. Dr. A. Sosin

2250 South Ogden St.
Denver, Colo. 80210
August 25, 1968

Dr. A. Sosin, Head
Div. of Materials Science and Engineering
College of Engineering
University of Utah
Salt Lake City, Utah 84112

Dear Dr. Sosin:

During our discussions last Monday you asked me to put together a short list of possible research projects I might pursue at Salt Lake and some sources of funding.

I am aware of three sources of funds: the N.I.H., N.S.F. and the Petroleum Research Fund of the American Chemical Society; the latter sponsors a great deal of basic work on polymers. I am not familiar with any of the other sources, such as the defense agencies. I understand that both the N.S.F. and the Petroleum Research Fund have research initiation grant programs for young, inexperienced Ph.D.'s. There would be a good chance of getting one of these to get started. The N.I.H. is so large that I would have to thoroughly study their contract-grant structure. I am experienced with the contract program of the Artificial Heart Program of the National Heart Institute, which is currently sponsoring a large amount of work on blood-compatible materials. There is also the possibility of getting a grant to support students in biomaterials. A few materials departments have obtained such funding. With the possible exception of the Petroleum Research Fund, however, funding for new projects is apt to get tighter and tighter, as you know.

I could start some fundamental work with a good microscope and a few chemicals and glassware. This would be the adsorption of proteins or other fluorescent materials on polymer and possible on metal and ceramic surfaces. As the work develops and hopefully some proposals are funded, I would like to expand the adsorption work by using ellipsometry and internal reflection infra-red spectroscopy. The infra-red facilities are no doubt available in chemistry; the ellipsometer would probably have to be written into a grant or contract. These three techniques, along with some simpler techniques whose equipment is best homebuilt, would form the basis of a good surfaces laboratory -- to study adsorption, catalysis, and corrosion. A scanning electron microscope, if it is obtained, could be extensively used in such work, as could a microprobe if one becomes available on the campus. Constant temperature baths and hot stages would enable one to do some good work on adsorption and crystallization kinetics.

I am also interested in studying some of the electrokinetic properties of surfaces: zeta and streaming potentials. Such studies can provide information as to the nature and extent of the electrical double layer, which is essential if one is to understand adsorption. A surface potential rig can be rather easily constructed from scrounged equipment; it can be used to measure surface potential and help determine the orientation of adsorbed polarizable molecules.

Deciding exactly what to do and when to do it will depend on space, time, and perhaps money -- and possibly on students. None of the techniques I mentioned require expensive equipment. An ellipsometer can be purchased for around \$5000, though accessories would increase the figure; a zeta potential apparatus can be built for 1 to \$2000; surface potential equipment can be built for \$1000 or less; a good microscope hot stage for kinetic studies would cost \$1600; an internal reflection accessory for an infra-red spectrometer is less than \$1000. Thus much of this equipment can be written into rather small proposals.

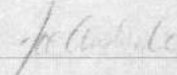
During our meeting we discussed another proposal I wrote which was not funded, probably because it asked for too much equipment and money. The proposal is an example, however, of how basic surface science might be applicable to medical and biochemical problems. The technical portion of that proposal, the portion I wrote, is enclosed. Please return it to me as it is the only copy I have. It was written a year ago a bit naively and is now outdated.

If you have any questions, or need any additional information, please let me know.

I know a joint appointment would spread me a little thin -- and that I would be trying to satisfy you and Dean Williams as well as Dr. Kolff and perhaps other medical people. But I am confident I could meet the challenge successfully.

Thank you for the tours, meetings, and discussions. It was a most exciting experience.

Sincerely,


Joe Andrade

cc. Dean M.L. Williams



THE UNIVERSITY OF UTAH

SALT LAKE CITY 84112

COLLEGE OF ENGINEERING
OFFICE OF THE DEAN

21 August 1968

2000 MERRILL ENGINEERING BUILDING
TELEPHONE 801-322-6911

Mr. J. D. Andrade
2250 South Ogden Street
Denver, Colorado 80210

Dear Mr. Andrade,

I appreciated your visit to our College, and enjoyed your seminar. I am sorry that our time was so short.

I regret that I forgot to ask you if you had a copy of the notes with you on the latter part of the course in Denver.

Sincerely yours,

M. L. WILLIAMS
Dean

MLW:iw

COTTON CONTENT

2250 South Ogden Street
Denver, Colorado 80210
August 11, 1968

Donald J. Lyman
Polymer Sciences Division
Stanford Research Institute
Menlo Park, California

Dear Don,

Tonio loved the champagne! We really enjoyed your company,
the champagne, and the conversation.

We will be going to Salt Lake next week to interview with
Dr. Kolff and the head of the materials group, Dr. Sosin,
about a joint appointment. I'm a bit tense and quite
curious about the trip. You mentioned that there might
be something open in Seattle. I've enclosed two copies
of my resume (curriculum vita sounds a bit too presumptuous)-
one for your files and one to pass on to Seattle in the
event something develops.

I have a great deal of apprenticing yet to do - some in
basic research and some in the more applied and clinical
aspects of biomaterials.

Thanks again for the use of your slide.

Have a good trip to Russia.

JA: ba !

Спасибо,

Joe

2250 South Ogden Street
Denver, Colorado 80210
August 9, 1968

Dr. W. J. Kolff
Division of Artificial Organs, Bldg. 512
Department of Surgery
University of Utah College of Medicine
Salt Lake City, Utah 84112

Dear Dr. Kolff:

Thank you for your letter of August 6.

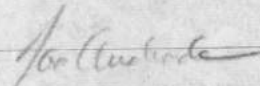
Monday, August 19, will be fine. I will be at your office a little before 8 so that perhaps we can talk a bit before the morning Division meeting. I will be prepared to give a short 15 minute talk illustrated with lantern slides on polymer-protein interactions.

I also received a letter from Dr. Sosin asking me to give a seminar to the Materials Division. We discussed the topic, length, and audience yesterday on the phone. It will deal primarily with polymer surface morphology and energy, with emphasis on polymer-protein effects.

The Mount Majestic Lodge sounds very exciting. I will call Mrs. Howard shortly after we arrive in Salt Lake City for confirmation and directions. Could you have your secretary send a map of the campus, with your office clearly marked, to the Lodge?

I am very much looking forward to meeting all of you on Monday.

Sincerely,



Joe Andrade

cc: Dr. Sosin



THE UNIVERSITY OF UTAH

SALT LAKE CITY 84112

322-7221
7211

801-

322-6911

XTN 7012 Engr Off

COLLEGE OF ENGINEERING

DIVISION OF MATERIALS SCIENCE
AND ENGINEERING

6 August 1968

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801-322-7012

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801-322-7537

Physics

Mr. J. D. Andrade
2250 South Ogden Street
Denver, Colorado 80210

Dear Mr. Andrade:

Dr. Kolff has informed me of your plans to visit the University of Utah on August 19 and 20. We would appreciate it if you would plan a seminar for the Materials Division during your visit. The topic is to be of your choosing, of course, but we are interested in your thoughts on materials problems in biomedical research.

30 min
Spin research
problems

We look forward to your visit.

Surface morphology

Sincerely yours,

A. Sosin

A. Sosin, Head
Division of Materials
Science and Engineering

AS:jb



THE UNIVERSITY OF UTAH
COLLEGE OF MEDICINE

DEPARTMENT OF SURGERY

SALT LAKE CITY 84112

August 6, 1968

Bldg. 512

DIVISION OF ARTIFICIAL ORGANS

WILLEM J. KOLFF, M.D., Ph.D.

Chairman/Professor of Surgery

J. D. Andrade
Biomaterials Group
University of Denver
College of Engineering
Department of Metallurgy
University Park,
Denver, Colorado 80210

Dear Mr. Andrade:

It seems to me that Monday, August 19, would be the best day for you to be here. I am writing to Mrs. Howard, who is the owner of the Mount Majestic Lodge in Brighton to ask her to extend hospitality to you, your wife, and your child for the night of Sunday, in the lodge. She was nice enough to offer some time ago the use of her facilities for promising scientists that considered joining us. Brighton is a very lovely place and I am sure you will enjoy the Sunday there. I will hear from Drs. Sosin and Williams whether they will be in town. I strongly recommend that we have it on this weekend since I may have other commitments on other weekends.

Sincerely yours,

W. J. Kolff, M.D.

WJK/jb

cc: Dr. Sosin
Dean Williams
Mrs. Howard

Sosin and Williams will probably be here. I asked them.

August 1, 1968

Dr. W. J. Kolff
Div. of Artificial Organs, Bldg. 512
Department of Surgery
University of Utah College of Medicine
Salt Lake City, UT 84112

Dear Dr. Kolff:

Thank you for your letter of July 29, 1968.

Would it be possible for me to interview with you and with Drs. Sosin and Williams on a Monday and Tuesday? I would prefer those days, so that would enable my family and I to drive over some Saturday and spend part of the weekend exploring Salt Lake City. Monday, August 12, or any Monday thereafter, except for August 26 would be fine.

I would be very happy to give a short talk on some of my recent work on protein-polymer interface interactions. Can I bring both 2x2 and lantern slides?

If Dean Williams or Dr. Sosin would like me to give a talk to the Materials Institute, I would be happy to do so. Thank you.

Sincerely,

J. D. Andrade
Biomaterials Group

JDA/mc



THE UNIVERSITY OF UTAH
COLLEGE OF MEDICINE

DEPARTMENT OF SURGERY

SALT LAKE CITY 84112

July 29, 1968

Bldg. 512

DIVISION OF ARTIFICIAL ORGANS

WILLEM J. KOLFF, M.D., Ph.D.

Chairman/Professor of Surgery

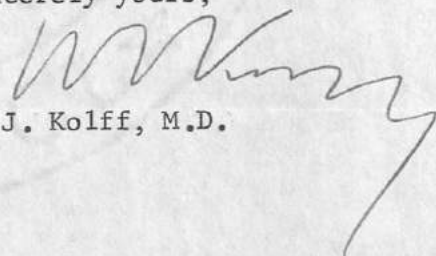
Mr. J. D. Andrade
2250 South Ogden Street
Denver, Colorado 80210

Dear Mr. Andrade:

Please let me know when you want to come in August. At that time I would like to discuss further plans. It will have to do with the blood materials interphase and I hope that this could be applied to either artificial hearts, or artificial kidneys. If you know what time you might arrive at the airport we can pick you up. It would be most useful if you could stay over one night, so that you can then participate in one of our morning conferences, which start at eight o' clock and assembles all of the members of the Division of Artificial Organs. On that occasion we would like you to give a short talk about fifteen minutes, and about anything that you are most interested in.

Dr. Sosin in the Department of Engineering, and Dean Max Williams, would also like to see you when you come to visit. There is a possibility of a joint appointment between us and the Materials Research Institute.

Sincerely yours,


W. J. Kolff, M.D.

WJK/jb

cc: Dr. Sosin
Dean Williams

2250 South Ogden St.
Denver, Colo. 80210
July 21, 1968

Dr. W.J. Kolff
Div. of Artificial Organs, Bldg 512
Dept. of Surgery
College of Medicine
University of Utah
Salt Lake City, Utah 84112

Dear Dr. Kolff:

Thank you for your recent telephone call and the request for an interview in Salt Lake City. We decided at that time to wait until August for the trip.

My young son arrived safely and eagerly, the comprehensive examinations are now over and passed, and the Denver Conference on Biomedical Materials ended yesterday -- so things are finally settling down to a more healthy pace.

Dean Williams and I talked briefly at the Conference; I am looking forward to talking with him again in Salt Lake.

I am planning on a graduation date in December, as we discussed over the phone.

A copy of my curriculum vitae is attached. It is complete except that it does not list the tutorial lecture I gave last Tuesday at the Denver Biomaterials Conference; the lecture was titled "The Chemical Properties of Solids."

I will be happy to go to Salt Lake in mid or late August. I would most appreciate any details on the position you have in mind for me.

Thank you for your kind attention.

Sincerely,

J. D. Andrade



THE UNIVERSITY OF UTAH
 COLLEGE OF MEDICINE
 DEPARTMENT OF SURGERY
 SALT LAKE CITY 84112

322-7201
 801

DIVISION OF ARTIFICIAL ORGANS
 WILLEM J. KOLFF, M.D., Ph.D.
 Chairman/Professor of Surgery

June 19, 1968

322-
 *M-6296

322-7182

328-3711

801-322-6296

Mr. J. D. Andrade
 College of Engineering
 Department of Metallurgy
 University Park
 Denver, Colorado 80210

Dear Mr. Andrade:

I have read your letter with great pleasure and I have studied the reprints with enthusiasm. I would indeed love a cooperative program with you.

A \$200,000 kidney development contract has been approved but not signed. As soon as it is signed I would have a place for you if your requirements are indeed modest.

Dr. Kumar is our polymer chemist and I will take this up with him. May I ask Dr. Predecki for references?

It would probably be good if you could come here for a visit. We will pay your expenses from Denver to Salt Lake City and back.

Sincerely yours,

W. J. Kolff, M. D.

WJK/bwh

June 24, 1968

Dr. W. J. Kolff
Division of Artificial Organs
Building 512
Department of Surgery
College of Medicine
University of Utah
Salt Lake City, Utah 84112

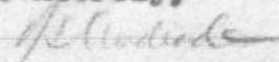
Dear Dr. Kolff:

Since writing to you on June 3 I have prepared a resume of my background. A copy is attached for your information.

I will stay at the university until graduation, which should be in mid-December, 1968. Is there any possibility of a joint appointment with the College of Engineering or of a post-doctoral fellowship for 1969?

Thank you for your kind attention.

Sincerely,


J. D. Andrade

cc: Dean M. C. Williams
College of Engineering



THE UNIVERSITY OF UTAH
COLLEGE OF MEDICINE

DEPARTMENT OF SURGERY

SALT LAKE CITY 84112

May 28, 1968

Bldg. 512
DIVISION OF ARTIFICIAL ORGANS
WILLEM J. KOLFF, M.D., Ph.D.
Chairman/Professor of Surgery

Mr. J. D. Andrade
Department of Metallurgy
College of Engineering
University of Denver
University Park
Denver, Colorado 80210

Dear Mr. Andrade:

Upon my return from South America I received a photocopy of your letter to Dean Williams. Please send me a curriculum vitae and list of publications, but at this time please realize that I suffer from the general uncertainty that we live in by our contracts and grants not being signed in Washington.

With best personal regards.

Sincerely yours,


W. J. Kolff, M. D.

WJK:nem

cc: Dean M. C. Williams



THE UNIVERSITY OF UTAH

SALT LAKE CITY 84112

COLLEGE OF ENGINEERING
1073 MERRILL ENGINEERING BUILDING

13 May 1968


Mr. J. D. Andrade
University of Denver
College of Engineering
Department of Metallurgy
Denver, Colorado 80210

Dear Mr. Andrade:

Thank you for your interest in a teaching appointment at the University of Utah.

We do have an expanding program in materials research and also in biomedical engineering. I will review the available openings in these areas and notify you of any possibilities by 23 May 1968.

Sincerely yours,


M. L. WILLIAMS
Dean

MLW:jb

June 3, 1968

Dr. Willem J. Kolff
Division of Artificial Organs, Bldg. 512
Department of Surgery
Univ. of Utah College of Medicine
Salt Lake City, Utah 84112

Dear Dr. Kolff:

Thank you for your letter of May 28.

As I am a graduate student, with little research or industrial experience, it would be somewhat presumptuous to produce a curriculum vitae. I will attempt to cover everything in this letter.

I have been involved in biomaterials study and research for three years. Shortly after arriving in Denver to begin graduate work on an NSF Training Grant I became interested in biomaterials. After thoroughly surveying the literature and publishing a short paper on the subject (enclosed), my interest focused on contact activation and the blood foreign surface problem. I became very familiar with the clotting mechanism and contact activation, with emphasis on the problems associated with implanted materials, and discussed the problems with Doctors Paton and von Kaula of the Univ. of Colorado Medical Center. Dr. Predecki joined the faculty at this time and agreed to be my thesis advisor. I wrote a proposal with Dr. Predecki as principle investigator titled: Coagulation-Resistant Coatings by Enzyme Inhibition. This was funded by Dr. Hasting's group at NHI and work is in progress; the one-year contract ends in September. A preliminary and somewhat naive abstract was published and a talk given at last year's Stockholm conference (attached); the work was not followed up. My work and ideas were presented at the Artificial Heart Program Materials Contractors' Meeting in Bethesda last December. A copy of that presentation is also enclosed. I am not a biochemist or a polymer chemist, but in the process of doing this work I have become quite familiar with many of the techniques used in polymer and protein analysis and synthesis, particularly those relating to surface modification and analysis.

The above work provided me with a great deal of experience. It also allowed me to meet and discuss the work with many exciting people, particularly Dr. Leo Vroman, Dr. Donald Lyman, and Dr. Richard Falb. But it did not qualify as a thesis.

I finally began to realize that one cannot hope to understand or prevent contact activation without understanding the basic surface -- protein interactions; this had already been discussed very convincingly in the literature by Doctors Vroman and Lyman. My Ph.D. thesis thus became a study of the interaction of plasma proteins with polymeric surfaces, with emphasis on the possible effects of surface morphology and crystallinity. This work is only beginning, though the technique is now under control and ready to go. I hope to complete the work this summer but that may be a bit too optimistic. The technique is to fluorescently tag plasma proteins and, using a fluorescence microscope, to literally see the interaction (adsorption) sites on the polymer and metal surfaces. Hopefully there will be a correlation between the morphology and energy of the surface and protein adsorption, though my work has not progressed this far. The work is now on polymer surfaces but I hope to extend it in the future to metal and ceramic surfaces. With metals it might be feasible to combine the above with surface potential measurements, which might shed some light on some of Dr. Sawyer's findings with metals. I am confident that the fluorescence technique could also be applicable to studies of membrane permeability, though my background in membrane diffusion is not very strong.

In addition to the biomaterials experience and interests noted above, I am also familiar with the basic properties of engineering materials and the techniques and methods commonly used to test and study them.

I very much want to work in a group where I can learn and grow. I am 27, married, and extremely interested and involved in biomaterials and teaching. I will be happy to work, enthusiastically and hard, in any related area where my background might be of value. Doctors Lyman, Hastings, Vroman, and Falk, as well as Silas Braley, know of my work, ideas, and sincerity. I would be happy to work under nearly any possible arrangement and salary, preferably starting in September.

Thank you for your kind attention.

Sincerely,

J. D. Andrade
J. D. Andrade

May 1, 1968

Dr. M.C. Williams
Dean of Engineering
University of Utah
Salt Lake City, Utah

Dear Dr. Williams:

This is a letter of tentative application for a teaching or research position in the College of Engineering.

I am a Ph.D. candidate in the Dept. of Metallurgy and Materials Science at the University of Denver. My thesis deals with the interactions between blood proteins and polymer surfaces. I will complete all requirements in June and my thesis work in September, though I probably will not have the degree in hand before December, 1968. Thus I am looking for a teaching or research appointment for September, 1968.

I understand that a materials science group is evolving within the Dept. of Mechanical Engineering. If you are looking for people to add to this group, I would most appreciate your consideration. I am familiar with Dr. Kolff's work on artificial internal organs though I regret to say I have never met the man personally. I have talked with his colleague at Cleveland, Dr. Nose, along with many other people in the biomaterials and artificial organ areas. If you are looking for someone to serve in an interdisciplinary capacity with life science people, I think I would be well qualified. I have a good background in organic and biochemistry, particularly protein chemistry, and a fair knowledge of physiology, in addition to the math and physics required of a materials scientist. I am a member of the American Society for Artificial Internal Organs and the American Chemical Society, in addition to several materials groups.

Thank you for your kind attention. If a position is available, I would appreciate your consideration. I can supply references, transcripts, publications, and any other supporting documents you might require.

Sincerely,

J. D. Andrade
J. D. Andrade