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Washington, DC 20529

U.S. Citizenship and Immigration Services

B5

[redacted]

FILE: WAC 03 156 54158 Office: CALIFORNIA SERVICE CENTER Date: SEP 02 2004

IN RE: Petitioner: [redacted]
Beneficiary:

PETITION: Immigrant Petition for Alien Worker as a Member of the Professions Holding an Advanced Degree or an Alien of Exceptional Ability Pursuant to Section 203(b)(2) of the Immigration and Nationality Act, 8 U.S.C. § 1153(b)(2)

ON BEHALF OF PETITIONER:

[redacted]

INSTRUCTIONS:

This is the decision of the Administrative Appeals Office in your case. All documents have been returned to the office that originally decided your case. Any further inquiry must be made to that office.

Mari Johnson

for Robert P. Wiemann, Director
Administrative Appeals Office

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identifying data deleted to prevent clearly unwarranted invasion of personal privacy

DISCUSSION: The employment based immigrant visa petition was denied by the Director, California Service Center, and is now before the Administrative Appeals Office on appeal. The appeal will be sustained, and the petition will be approved.

The petitioner seeks classification pursuant to section 203(b)(2) of the Immigration and Nationality Act (the Act), 8 U.S.C. § 1153(b)(2), as a member of the professions holding an advanced degree. At the time of filing, the petitioner was working as a researcher in the Materials Sciences Division at the Lawrence Berkeley National Laboratory. The petitioner asserts that an exemption from the requirement of a job offer, and thus of a labor certification, is in the national interest of the United States. The director found that the petitioner qualifies for classification as a member of the professions holding an advanced degree, but that the petitioner had not established that an exemption from the requirement of a job offer would be in the national interest of the United States.

Section 203(b) of the Act states in pertinent part that:

> (2) Aliens Who Are Members of the Professions Holding Advanced Degrees or Aliens of Exceptional Ability. --
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> > (A) In General. -- Visas shall be made available . . . to qualified immigrants who are members of the professions holding advanced degrees or their equivalent or who because of their exceptional ability in the sciences, arts, or business, will substantially benefit prospectively the national economy, cultural or educational interests, or welfare of the United States, and whose services in the sciences, arts, professions, or business are sought by an employer in the United States.
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> > (B) Waiver of job offer.
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> > > (i) Subject to clause (ii), the Attorney General may, when the Attorney General deems it to be in the national interest, waive the requirements of subparagraph (A) that an alien's services in the sciences, arts, professions, or business be sought by an employer in the United States.

The petitioner holds a Ph.D. in Applied Science and Technology from the University of California, Berkeley. The petitioner's occupation falls within the pertinent regulatory definition of a profession. The petitioner thus qualifies as a member of the professions holding an advanced degree. The remaining issue is whether the petitioner has established that a waiver of the job offer requirement, and thus a labor certification, is in the national interest.

Neither the statute nor regulations define the term "national interest." Additionally, Congress did not provide a specific definition of "in the national interest." The Committee on the Judiciary merely noted in its report to the Senate that the committee had "focused on national interest by increasing the number and proportion of visas for immigrants who would benefit the United States economically and otherwise. . . ." S. Rep. No. 55, 101st Cong., 1st Sess., 11 (1989).

Supplementary information to regulations implementing the Immigration Act of 1990 (IMMACT), published at 56 Fed. Reg. 60897, 60900 (November 29, 1991), states:

> The Service believes it appropriate to leave the application of this test as flexible as possible, although clearly an alien seeking to meet the [national interest] standard must make a showing significantly above that necessary to prove the "prospective national benefit" [required of aliens seeking to qualify as "exceptional."] The burden will rest with the alien to establish that exemption from, or waiver of, the job offer will be in the national interest. Each case is to be judged on its own merits.

Matter of New York State Dept. of Transportation, 22 I&N Dec. 215 (Comm. 1998), has set forth several factors which must be considered when evaluating a request for a national interest waiver. First, it must be shown that the alien seeks employment in an area of substantial intrinsic merit. Next, it must be shown that the proposed benefit will be national in scope. Finally, the petitioner seeking the waiver must establish that the alien will serve the national interest to a substantially greater degree than would an available U.S. worker having the same minimum qualifications.

It must be noted that, while the national interest waiver hinges on *prospective* national benefit, it clearly must be established that the alien's past record justifies projections of future benefit to the national interest. The petitioner's subjective assurance that the alien will, in the future, serve the national interest cannot suffice to establish prospective national benefit. The inclusion of the term "prospective" is used here to require future contributions by the alien, rather than to facilitate the entry of an alien with no demonstrable prior achievements, and whose benefit to the national interest would thus be entirely speculative.

Eligibility for the waiver must rest with the alien's own qualifications rather than with the position sought. In other words, we generally do not accept the argument that a given project is so important that any alien qualified to work on this project must also qualify for a national interest waiver. At issue is whether this petitioner's contributions in the field are of such unusual significance that he merits the special benefit of a national interest waiver, over and above the visa classification sought. By seeking an extra benefit, the petitioner assumes an extra burden of proof. A petitioner must demonstrate a past history of achievement with some degree of influence on the field as a whole. *Id.* at note 6.

Along with documentation pertaining to his field of research, the petitioner submitted several witness letters.

Dr. Eugene Haller, Professor and Electronic Materials Program Leader, Department of Materials Science and Engineering, University of California, Berkeley, states:

> [The petitioner's] most recent research focusing on Indium Nitride has led to the surprising result that the bandgap of this material is by over a factor of two smaller in high quality films than has been widely assumed. The highly competitive research area has catapulted [the petitioner] into the small group of international leaders in this area. At the recent MRS [Materials Research Society] Fall 2002 Meeting in Boston, he won the 1st prize for his poster on InN characterization.
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> It is the success with InN studies which sets [the petitioner] apart from other highly skilled and experienced researchers. InN alloyed with GaN forms a semiconductor system which exhibits

exceptional promise for a new kind of solar cells, so-called "tandem cells" consisting of a series of p-n-junctions, each with a slightly different composition and together matching perfectly the full solar spectrum.... [The petitioner's] role in advancing our knowledge of this novel semiconductor material InGaN is and will remain crucial.... It is his scientific contributions that have led to the recognition that a new and promising semiconductor system exists, a system with highly unusual promise.

Dr. William Schaff, Senior Research Associate, Cornell University, School of Electrical Engineering, states:

[The petitioner's] research focuses on the design, modeling, processing, and characterization of wide bandgap III-V nitride optoelectronic devices, including nitride based lasers, light emitting diodes (LEDs), reflectance modulators, photodetectors, transistors and solar cells.... He has discovered new semiconductor properties of the GaInN family which are predicted to produce breakthrough efficiencies in solar cells. This accomplishment is vital to the development of solar cells for defense and civilian applications, and, as a result, there have been more than 10 professional papers published based on his research, in addition to more than 15 publications previous to that.

Dr. Alan Portis, Professor Emeritus, Department of Physics, University of California, Berkeley, states:

[The petitioner's] research has been concerned largely with the electronic structure of electronegativity-mismatched semiconductor alloys. Not only has he mastered the required experimental techniques...he has also carried out the necessary theoretical analysis:

Using a momentum-space variational method, [the petitioner] has calculated the shallow-donor binding energy and its Bohr radius in mismatched semiconductor alloys, where the conduction band becomes non-parabolic as a result of a band-anticrossing effect.

[The petitioner] is truly unique.

G. Scott Hubbard, Director of the Ames Research Center of the U.S. National Aeronautics and Space Administration (NASA), states:

A strategic and important activity within my organization is the Center for Nanotechnology, in which we are developing new nanotechnologies for applications within NASA.... [The petitioner's] work enabled us to demonstrate that we had achieved the desired "quantum confinement" in our nanowires. In planned follow-on work, we expect our collaboration with [the petitioner] will enable us to speed up the development of organized nanostructures for opto-electronic and nanoelectrochemical systems for applications within the NASA space exploration effort. These efforts are an integral part of NASA's efforts to make lighter satellites with increased capabilities.

While not directly related to our efforts within our Center for Nanotechnology, I have become aware of [the petitioner's] recent work on carbon nanotubes. This work is at the cutting edge of nanotube research and this, and future discoveries he might be expected to make, should also benefit our program.

As I am sure has been covered in detail in other support letters, [the petitioner] is performing ground-breaking work in developing InN and its alloys with GaN as a possible high efficiency, radiation-hard solar cell technology. He performs his research in the Electronic Materials Program at the Lawrence Berkeley National Laboratory. This program has been very successful.

[redacted] Senior Research Scientist [redacted] Golden, Colorado, states:

Our reliance on foreign energy sources makes our economy very vulnerable, and this is a trend that should be reversed rather than enhanced. As solar-cell technology is advanced it will have a better chance of being able to help reverse this trend, especially if the new technology is developed in the United States. Small fields of solar cells are already being deployed in the United States; and, elsewhere in the world (in countries for which the cost of electricity is higher) their use is becoming commonplace. One of the fastest growing segments of this market is for solar cells with efficiencies that are somewhat higher efficiency (20% versus 15%).

* * *

[The petitioner] is one of a handful of scientists in the United States who is investigating GaInN and GaInNAs for application in solar cells. His special expertise lies with the characterization of semiconductor materials. His studies (see his extensive publication list) have helped the research community to understand the band structures of these materials as well as the roles of some of the defects and dopants.

[redacted] Professor of Materials [redacted] Berkeley, and Principal Investigator at the Lawrence Berkeley National Laboratory, states:

[The petitioner's] research focuses on an extremely important field, the processing and characterization of nitride semiconductors. Nitride semiconductors (such as AlN, GaN and InN) distinguish themselves from other semiconductors by their wide bandgap energies, which extends from previously believed bandgap of 1.9 eV (red color) of InN to 3.4 eV (near ultra-violet) of GaN and to 6.2 eV (deep ultra-violet) of AlN. The development in blue/ultra-violet light emitting diodes (LEDs) and laser diodes, and also high-frequency transistors operating at high powers and temperatures, has proved the benefits of the nitride materials system. The use of InN and its alloys with GaN and AlN makes it possible to extend the emission of nitride-based LEDs from ultra-violet to red. Ga-rich InGaN alloys and quantum wells are now widely used in blue LEDs and other optoelectronic devices. However, high-quality InN crystals and In-rich InGaN alloys have not been successfully grown until very recently by [the petitioner] and his colleagues. Using an advanced thin film deposition technique called Molecular Beam Epitaxy, they have grown InN films with electron mobility almost 10 times higher than previously reported. And more surprisingly, when [the petitioner] measured these high-quality InN crystals, he found that the bandgap of InN is only 0.7 eV, much smaller than the previously accepted value of 1.9 eV that has been recorded in textbooks. The significance of this discovery is that the gap energies of the InGaN alloy system are extended further down from previously 1.9 eV in the red to currently 0.7 eV in the infrared.

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In view of solving our nation's ever-deteriorating energy crisis, the importance of solar cell research can never be over-estimated. To convert as much sunlight as possible into electricity, one has to find appropriate materials whose bandgap matches the solar spectrum. Currently the state-of-the-art solar cells are made of multi-junctions based on Ge (with a fixed bandgap 0.66eV). GaAs (1.42eV) and GaInP (1.9eV), and can convert solar energy up to 31% (developed at the National Renewable Energy Laboratory at Colorado). Now with the narrow bandgap of InN at 0.7 eV, we can use a SINGLE alloy system, InGaN, to cover the entire solar spectrum. InGaN thus provides us with fantastic opportunities to fabricate solar cells with much higher conversion efficiency (up to 70%), and also large flexibility (because the bandgap can be tuned by changing the composition of InGaN) and simplicity (since only one alloy system with three elements is involved) in the fabrication process, which greatly reduces the cost of solar cell conversion.... [The petitioner] has filed a patent on nitride-based photovoltaic technology in the mean time of continuing working toward realizing the nitride-based solar cells.

Another issue of the solar cell technology is the irradiation resistance of solar cells. Because all satellites are now powered solely by solar cells, these cells have to be electronically robust enough to resist the high-density high-energy particle irradiation that exists in the earth's Van Allen radiation belt and degrades the material properties. [The petitioner's] very recent results (in collaboration with National Renewable Energy Laboratory, to be published in the *Journal of Applied Physics*) show that the InN-based alloys have superior radiation resistance as compared to previous solar cell materials (such as GaAs and GaInP). These exciting new discoveries signify a further progress toward the applications of nitride-based solar cells in outer space programs, especially those closely related to scientific explorations of U.S. National Aeronautics and Space Administration and defense programs of U.S. Department of Defense. In addition to the applications in photovoltaic technology, the discovery of the narrow bandgap of InN also extends the working spectrum of existing photoelectronic devices to the near infrared. Integrating circuits and devices based on the wonderful InGaN alloys, full-spectrum light-emitting devices made of a single material system will emerge soon at relatively low price and find tremendous applications in areas ranging from national security (such as missile targeting technology and satellite powering technology) to our daily life (such as energy-efficient traffic lights and music CD players). [The petitioner's] research is undoubtedly on the very frontier of semiconductor research and has great significance to the interests of our country on a national level.

* * *

I have not had much personal contact with [the petitioner] during his five years' studies at Berkeley. However, that did not prevent me from appreciating his research achievements throughout these years since my own research is also related to this area. He has published more than 40 scientific articles on professional journals during this period, which is an outstanding record as compared to any Ph.D. graduates in this field. He is the first author in about 20 of these articles. From my connection with other senior members in his group I know that he is the one who does all the practical and crucial job in this research, including designing and performing the detailed experiments and doing the complicated calculations. His work that has made breakthroughs in the nitride research is not only excellent but also unique. A continuing progress in nitride alloys research would become practically impossible without

his continuing participation. The expertise, experiences and knowledge that he possesses in the nitrides research field put him on an irreplaceable position over other researchers working in the same field. Some of the articles that he has published are now very heavily cited and widely considered as among the founding contributions in the area of nitrides research.

In support of the witness' statements, the petitioner presented a citation history showing that four of his published articles have garnered an aggregate total of 180 citations. One of these articles, entitled "Unusual Properties of the Fundamental Band Gap of InN" (which the petitioner first-authored), has been cited eighty times. When judging the influence and impact that the petitioner's published work has had, the very act of publication is not as reliable a gauge as is the citation history of the published works. Publication alone may serve as evidence of originality, but it is difficult to conclude that a published article is important or influential if there is little evidence that other researchers have relied upon the petitioner's findings. In this case, the substantial number of citations of the petitioner's published articles demonstrates widespread interest in, and reliance on, the petitioner's work. The citation history of the petitioner's work shows that many other scientists in the United States and from around the world have acknowledged the petitioner's influence and found his work to be significant.

The director denied the petition, stating that the petitioner failed to establish that a waiver of the requirement of an approved labor certification would be in the national interest of the United States. The director acknowledged the intrinsic merit and national scope of the petitioner's work, but found that the petitioner's own contribution does not warrant a waiver of the job offer requirement that, by law, attaches to the classification that the petitioner chose to seek.

On appeal, we find that the evidence presented is adequate to meet the three-prong test established by *Matter of New York State Dept. of Transportation.* The heavy independent citation of the petitioner's published work, along with the statements of witnesses from outside of the petitioner's immediate circle of colleagues, shows that petitioner's work has advanced his field to a substantially greater degree than that of other similarly qualified researchers. Upon careful consideration of the documentation presented, we find that the petitioner has shown that researchers from throughout his field view his discoveries as significant breakthroughs in nitride research.

It does not appear to have been the intent of Congress to grant national interest waivers on the basis of the overall importance of a given field of research, rather than on the merits of the individual alien. That being said, the above testimony, and further evidence in the record, establishes that the greater scientific community recognizes the significance of this petitioner's research rather than simply the general area of research. The benefit of retaining this alien's services outweighs the national interest that is inherent in the labor certification process. Therefore, on the basis of the evidence submitted, the petitioner has established that a waiver of the requirement of an approved labor certification will be in the national interest of the United States.

The burden of proof in these proceedings rests solely with the petitioner. Section 291 of the Act, 8 U.S.C. § 1361. The petitioner has sustained that burden. Accordingly, the decision of the director denying the petition will be withdrawn and the petition will be approved.

ORDER: The appeal is sustained and the petition is approved.