

## Local Section Innovative Project Grant (IPG) Application Form

<b>Reference #</b>	8310234
<b>Status</b>	Complete
<b>Login Username</b>	
<b>Login Email</b>	
<b>Sponsoring Local Section:</b>	Akron
<b>Submission Date:</b>	01/29/2015
<b>Title of Project:</b>	Polymers 101: Teaching Polymer Science without Molecules
<b>Brief Description:</b>	Development of a packaged outreach program for education in polymer science which does not presume knowledge of molecular structure but is still rigorous in scientific content. The packaged program will be implemented by multiple partner institutions as an outreach activity.
<b>Name:</b>	Regan Silvestri, Assistant Professor of Chemistry
<b>Address:</b>	Lorain County Community College 1005 North Abbe Rd Elyria, Ohio 44035
<b>Tel:</b>	440-366-7257
<b>Email:</b>	rsilvestri@lorainccc.edu
<b>Does the Section currently have an IPG?</b>	No
<b>If yes, indicate submission date:</b>	
<b>Name of Current Section Chair:</b>	Michael Davis, Chair and Charles Kausch, Chair-Elect
<b>Letter of Support from Local Section attached? (If the Section Chair is the Project Coordinator, a member of the Executive Committee must submit the support letter.)</b>	Yes
<b>Upload Local Section's letter of support here (acceptable formats: .pdf, .doc, .docx).</b>	<a href="#">Akron_IPG-Support_from_Section.pdf (50k)</a>
<b>Letter(s) of support from your co-sponsors attached?</b>	Yes
<b>Upload co-sponsor's letter(s) of support here (acceptable formats: .pdf, .doc, .docx).</b>	<a href="#">Akron_IPG-Support_from_Case_Western.pdf (60k)</a>
<b>Which groups are co-sponsors?</b>	External (non-ACS) Groups
<b>Specify partnership(s):</b>	Case Western Reserve Univ Cleveland State Univ Society of Applied Spectroscopy, Cleveland Sec Asian Services in Action Lorain County Community College

<p><b>What are the project's goals/objectives?</b></p>	<p>Existing educational programs in polymer science fall into one of two categories: (1) college level courses for second or third year students which require general chemistry as a prerequisite, or (2) primary/secondary education programs that are rudimentary in content and amount largely to performing in-class activities without an in-depth discussion of the science. We believe that this gap can be bridged, and endeavor to create an educational program in polymer science that does not require knowledge of general chemistry but is still rich in technical content. We believe that education in polymer science at the primary education level need not lack in content because students have not yet been introduced to the topic of molecular structure, which occurs in grade six per academic content standards. We endeavor to create an educational program in polymer science which is rigorous in technical and scientific content, and believe that these topics can be explained in lay-man terms.</p>
<p><b>How is this project consistent with your local section's strategic plan?</b></p>	<p>Community and public outreach have long been central to our Section's strategic plan. This project serves to coordinates our outreach activities through creation of a pre-packaged outreach program around a centralized topic, polymer science; a topic which is highly relevant to our economy in north-east Ohio. Likewise, this project serves to organize and mobilize our Section member volunteers, -again owing that the outreach program will be prepared as pre-packaged and that program kits will be created, assembled, and distributed to volunteers. We are confident of our potential for success with this program as we have firm commitments from partners with whom we have standing pre-established relationships; partnership commitments for this program were easily obtained owing to the extraordinary relevance of the topic of polymer science in north-east Ohio.</p>
<p><b>Justify how the project is innovative for your local section or a unique one-time opportunity.</b></p>	<p>The project is innovative in that the outreach program will not be simply a collection of activities and demonstrations on the topic of polymer science, but a cohesive educational program rich in rigorous scientific and technical content.</p>
<p><b>How will this project stimulate local section members to become and remain involved?</b></p>	<p>The Akron Section of the ACS has a strong volunteer community among our membership, whom are currently quite active in outreach. Likewise, partner institutions are also currently quite active in outreach. Creation of a packaged outreach program will coordinate our outreach activities, and will organize and mobilize our member volunteers. The availability of a prepared packaged outreach program will stimulate outreach activity as kits for conducting the outreach program are distributed.</p>

<p><b>What is the project's plan of action? Please include probable date(s).</b></p>	<p>*August 2015: create scientific content for educational outreach program          *September 2015: create instructions for demonstrations and activities included in the outreach program          *November 2015: initial beta-test of educational outreach program at Akron Public Schools          *January 2016: refine outreach program based on beta-test results          *February 2016: create a facilitators manual          *March 2016: Assemble multiple kits for outreach program to be used by participating partners          *May 2016: Host a train-the-trainers seminar event at Lorain County Community College for member volunteers and participating partners          *July 2016: Conduct a pilot of the outreach program with all partners present at Asian Services in Action summer camp for at-risk refugee and immigrant children International Community Empowerment Project</p>
<p><b>Identify target audience(s) and estimate the number of people to be reached. Estimate the number of members involved in organizing the project.</b></p>	<p>The proposed outreach program in polymer science will be created to be appropriate for elementary and middle school educational levels. As such, it will also be appropriate for application to adult audiences at a general lay-man's level. Furthermore, the program could be easily modified with the addition of content to be applicable at the high-school level. Historically, Professor Silvestri's community outreach activities typically reach 2000 people annually. Likewise, outreach activities by partner institution Case Western Reserve University, Department of Macromolecular Science typically reach 1000 people annually. With the creation of multiple program kits and distribution of the kits to member volunteers and partner institutions, we estimate that an excess of 5000 people will be reached by the program in the first year.</p>
<p><b>How will IPG funding seed continuing events following the completion of this project?</b></p>	<p>The proposed project not only creates an outreach program, but also packages the program, assembles and distributes kits for conducting the program to volunteer partners, and trains volunteers to conduct the program. Outreach activities by our local community of volunteers will be stimulated into the future as not only a new outreach program is created, but further, program kits for conducting the outreach program will be assembled and distributed.</p>
<p><b>Item:</b></p>	<p>assemble demonstrations and classroom activities</p>
<p><b>Expense:</b></p>	<p>400</p>
<p><b>Justification:</b></p>	<p>define which activities will be included in outreach program</p>
<p><b>Item:</b></p>	<p>beta-testing of program at Akron Public Schools</p>
<p><b>Expense:</b></p>	<p>200</p>
<p><b>Justification:</b></p>	<p>gain experience to refine developed program into a package</p>
<p><b>Item:</b></p>	<p>assemble multiple kits to distribute to partners</p>
<p><b>Expense:</b></p>	<p>1200</p>
<p><b>Justification:</b></p>	<p>assemble multiple copies of kits to distribute to partners</p>

<b>Item:</b>	host train-the-trainers seminar event
<b>Expense:</b>	600
<b>Justification:</b>	train volunteers to conduct outreach program
<b>Item:</b>	conduct pilot program with all partners present
<b>Expense:</b>	400
<b>Justification:</b>	all volunteers gain experience in facilitating the course
<b>Item:</b>	
<b>Expense:</b>	0.00
<b>Justification:</b>	
<b>Additional funds requested from other sources:</b>	0.00
<b>Justification:</b>	
<b>Project Total:</b>	2800.00
<b>Total Requested from LSAC:</b>	2800.00
<b>How do you plan to evaluate the success of your event?</b>	We will collect data regarding events that use the outreach program which are hosted by volunteers from all partner institutions. We will use a Google Drive spreadsheet to collect detailed data on a running basis concerning the number of events conducted and the number of participants impacted at events.
<b>What tools will you use to measure success of event (i.e., surveys)?</b>	A spreadsheet will be created on Google Drive where volunteers and partners can enter data concerning events which they have conducted. The spreadsheet will be created with column headers prompting users to enter specific data. As such, we will be able to track not only the total number of events over time, but when they were conducted, where they were conducted, who conducted them, who was the contact at the host site, how many students were impacted, how many teachers were impacted, etc.
<b>How will you use the data captured for future planning?</b>	We will create a Linked-in group to facilitate communication between volunteers. A Linked-in group will offer a convenient method of communication into the future as volunteers continue to conduct the course. Via the Linked-in group volunteers will be able to effectively communicate opportunities for future presentation sites. Furthermore, as experience is gained with offering the outreach program volunteers will be able to communicate suggestions for further development of the program.



Charles M.Kausch, Ph.D.  
Chair Elect: American Chemical Society – Akron Section PO Box 2993, Akron, OH 44309  
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January 26, 2014

My name is Charles Kausch, Senior Scientist with Omnova Solutions, and I am chair-elect of the Akron Section of the American Chemical Society. This letter is written on behalf of the Akron Section of the American Chemical Society, to give our unequivocal support of the IPG grant proposal “Polymers 101: Teaching Polymer Science without Molecules” submitted by Professor Regan Silvestri from Lorain County Community College together with the Akron Section of the American Chemical Society.

Professor Silvestri’s proposal is to develop a packaged outreach program for education in polymer science at the grade-school and middle-school levels. Existing polymer science education presumes knowledge of college level general chemistry as a prerequisite, and we wish to develop a program which can teach polymer science prior to this level. Our proposal is not simply to create an outreach program in polymer science for the elementary education level, but to create one that despite being appropriate for the elementary education level is still rigorous in detailed scientific content.

A key strength of Professor Silvestri’s proposal is that the outreach program will be packaged and distributed to the volunteer community within both the Akron Section of the American Chemical Society and the Cleveland Section, widening impact not only through our section but also through our neighboring ACS section. The topic of polymer science is extraordinarily relevant to our economy in northeast Ohio; not only is Akron dubbed “the Rubber City”, but Cleveland is also noted as a center for the plastics industry. As such, Professor Silvestri’s outreach program will serve to motivate interest in this important topic for the next generation of scientists.

Professor Silvestri is distinctively qualified to fulfill this grant proposal. He has developed and routinely presents the outreach programs “Chemistry Magic Tricks just for Fun” and “Spectroscopy for Kids”. Further, Professor Silvestri has a history of conducting these outreach programs spanning ten years and has impacted thousands of local students at all grade levels. Given Professor Silvestri’s prolific experience and extensive history of success with community outreach programs, we are confident in his ability to achieve success with the outreach program proposed in our IPG grant.

We are confident in the potential for success with this program and confident in its potential impact. Therefore, we offer our full support of Professor Silvestri to conduct the program for our local section. We kindly ask that you look upon Professor Silvestri’s grant application favorably.

Sincerely,

Charles M. Kausch  
Chair Elect: Akron Section of the American Chemical Society

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January 20<sup>th</sup>, 2015

Dear Regan,

I would like to confirm that I would be very interested in your new proposed packaged outreach program in polymer science. My group is very active in a number of outreach activities. These include a number of collaborations with the Cleveland Museum of Natural History (CMNH) as well as events in a number of Elementary Schools in the Cleveland area. In all cases our programs are designed to engage the general public and young students, in particular, in the excitement and impact of polymer science. For example, for the last 9 years on Martin Luther King Jr. Day my research group has been involved in a science outreach program in collaboration with the *CMNH*. The activity emerged from a long-standing collaboration between the Case team and the Museum's educational coordinators and is part of the Museum's "*Winter Discovery Day*." This annual event is free to the public and is held as part of a city-wide celebration of Dr. Martin Luther King Jr. and his commitment to education. Its main objective is to encourage economically disadvantaged families to visit the Cleveland educational institutions and explore their resources. Our participation in this activity is called "*Natures Materials*", which draws on examples of naturally occurring polymer materials that are familiar to the general public. The PI's team developed a series of activities that were designed to be fun and educational, and highlight the role of Nature's Polymers. Every year 800-1100 visitors embark on a tour that typically lasts 20 minutes and takes them along five science stations (each station being manned by at least two graduate students). The event allows the Case students to present complex scientific themes in laymen's terms to a very diverse audience. Having held this event for 9 years a key issue for us is to get new ideas and experiments into demonstrations. Having access to your proposed packaged outreach program would be a great boost for us in our outreach efforts, both for this event as well as the other similar events that we hold at Elementary schools.

Sincerely,



Stuart J. Rowan, PhD,  
Kent H. Smith Professor of Engineering  
Deputy Editor of ACS Macro Letters  
Department of Macromolecular Science and Engineering,  
Case Western Reserve University, USA