The Mission of the APPF is to provide scholarship support to facilitate Auburn University providing adequate and continuous supply of highly skilled, entry level engineers into the Pulp & Paper and Allied Industries.

EXECUTIVE COMMITTEE
President
Kevin Walls
Vice-President, Finance/Communications
R. Neal McDevitt
Treasurer
Donald L. Large
Public Affairs
Merle Stein
Membership & Development
Roger Lawton
Scholarship & Recruitment
Shirley Boulware
Scott Childress
Nominating
Charles Sewell
Foundation Meeting Planning
Chris Spraggins
AC-PABE Director
Zhihua Jiang
212 Ross Hall
Auburn University, AL 36849
T. 334.844.3046
F. 334.844.2063
wp.auburn.edu/appf

LETTER FROM THE PRESIDENT

The Auburn Pulp and Paper Foundation (APPF) had a great year thanks to all the member companies and volunteers that are committed to the success of not only our program, but of the Auburn University students. The APPF has grown substantially in the last year and our impact continues to do the same. The APPF influences the future of students who will become committed, skilled engineers by providing scholarships, co-op experiences, and job placement assistance when needed.

I would like to extend a warm welcome to the new member companies who recently joined us in our mission. We now have 30 member companies helping support the APPF mission. Additional member company support along with substantial contributions to our endowment have allowed us to have 61 students on scholarship this fall. The increase in our endowment, including a $1,000,000 contribution from Packaging Corporation of America this past year will allow us to offer scholarships to even more students in the future. I would also like to extend this welcome to our new board members. Without our board members working collaboratively, none of this would be possible.

None of this would be possible without Auburn University’s dedicated staff who support students on their journey to become future leaders in our industry. Their support and knowledge about our industry are an essential element to the APPF’s impact. Through their outreach efforts, student enrollment in Chemical Engineering’s Pulp and Paper Technology course has more than doubled in the past three years, showing the effect our endorsement and encouragement has on our prospective industry leaders. The engineers that come out of the Alabama Center for Paper and Bioresource Engineering (AC-PABE) and APPF’s partnership are the future leaders of the Pulp and Paper industry. They bring in innovative ideas that prove to be an indispensable resource for our industry.

As you examine this annual report, I hope you realize that our success is correlated to yours. You continue the momentum achieved over the past year. I encourage all members to become involved in APPF’s outreach activities. Your volunteerism and financial support is what nourishes and encourages the students involved in our foundation. Again, thank you to all the APPF member companies, the board of directors, committee chairs, and the Auburn University staff that help keep building a more influential APPF every year.

Please continue your efforts to expand our Foundation’s members and scholars. Opportunities provided by the APPF are limitless — and I am eager to see the APPF continue to grow and prosper in the coming years!

KEVIN WALLS
President, APPF
Back in the early 1980’s, a mill manager at Champion International began to pursue a dream that merged his love of the pulp and paper industry with his love of Auburn, his alma mater. That manager, Ted Crane, joined with fellow alum Steve Ledbetter and Dr. Robert Chambers as head of the AU Chemical Engineering to bring pulp and paper education to Auburn. Dr. Chambers recruited key faculty like Dr. Gopal Krishnagopalan and Dr. Ronald Neuman for the Pulp and Paper Research and Education Center, and Mr. Crane built support within the Alabama paper industry for a scholarship organization to attract students to the program. The center of gravity of the paper industry had moved to the southern United States, and Auburn was in the heart of it!

The scholarship organization—the APPF—was linked to the Auburn University Foundation, and its first presidents were corporate leaders within Champion like Dick Olson and Ken Nichols. Leadership then transferred to Alabama-based mill managers like Willis Potts and John Smyth. Their strong leadership brought stability and growth to the APPF, and the numbers of students on scholarship grew significantly. Support from College of Engineering Deans like Dr. William Walker, Dr. Larry Benefield, and Dr. Chris Roberts was instrumental in providing fertile ground for the Center to take root and then grow.

After Dr. Neuman’s tenure, Dr. Harry Cullinan was then chosen to lead the PPREC, guiding the Center through the challenges of handling those expanded student numbers. Recognizing that the focus of paper education had expanded, Dr. Cullinan updated the Center’s focus and gave it its current name: The Alabama Center for Paper and Bioresource Engineering. And as the industry consolidated, APPF presidents like Harold Wright, Pete Howard, Art Fuller, and Clarence Hornsby worked with Membership and Development chairs like Don Traywick, Charles Sewell, and Carl Sharpe to keep the numbers of member mills and supplier companies at a level that kept the APPF scholarship attractive to students while dealing with increasing tuition and greater numbers.

As fears brought on by the economic downturn of the middle 2000’s took hold, APPF presidents such as Chip Aiken, Mike Bruner, and Russell Harris positioned the APPF to grow. Financial policies suggested in those times began a long period of increases in the annual contributions and endowments received by the APPF that continues to the current day. Recent APPF presidents such as Chris Spraggins, Mike Lyles, and Kevin Walls, with the help of M&D chair Roger Lawton, the excitement and energy of current Center director Dr. Zhihua Jiang, and the support of Chemical Engineering Chair Dr. Mario Eden continue the thirty-year tradition of visionary leadership and close cooperation between the College, the Center, and the APPF that has brought a consistent supply of highly trained engineers to our industry, in fulfilment of our founders’ original dream.
## Inaugural Graduates

<table>
<thead>
<tr>
<th>Name</th>
<th>Year</th>
<th>Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eric Steelreath</td>
<td>1988</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>Frank Wesley</td>
<td>1988</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>John R. Hamilton</td>
<td>1988</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>Paula Williams Autrey</td>
<td>1989</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>Scot Brian Beck</td>
<td>1989</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>Rodney Lynn Cambron</td>
<td>1989</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>R. Neal McDevitt</td>
<td>1989</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>Russell Plenkers</td>
<td>1989</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>Allen Smith</td>
<td>1989</td>
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<tr>
<td>Thomas Willett</td>
<td>1989</td>
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<tr>
<td>Russell Hodges</td>
<td>1989</td>
<td>Electrical Engineering</td>
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<tr>
<td>Robert Irvin Bell</td>
<td>1990</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>Russell Vance Harris</td>
<td>1990</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>Marty Lowery</td>
<td>1990</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>Christopher Mickowski</td>
<td>1990</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>Eric Ogles</td>
<td>1990</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>Rodney L. Robinson</td>
<td>1990</td>
<td>Chemical Engineering</td>
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<tr>
<td>Mike Lyles</td>
<td>1990</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>Robert Thomas Barker</td>
<td>1990</td>
<td>Chemical Engineering</td>
</tr>
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</table>

## Celebrating 30 Years!
APPF EXECUTIVE COMMITTEE

PRESIDENT
KEVIN WALLS
International Paper, Pine Hill

VICE PRESIDENT
DANE GRISWOLD
Graphic Packaging International, Inc

FINANCE/COMMUNICATIONS
R. NEAL MCDEVITT
International Paper

TREASURER
KELLI D. SHOMAKER
CFO, Auburn University

APPF COMMITTEE CHAIRS
If any current members are willing and interested in serving on a committee, please reach out to that committee’s chair.

PUBLIC AFFAIRS
MERLE STEIN
merle.stein@albint.com

SPRING GOLF TOURNAMENT
MERLE STEIN
merle.stein@albint.com

FALL SILENT AUCTION
OWEN NICHOLS
owen.nichols@ecolab.com

MEMBERSHIP & DEVELOPMENT
ROGER LAWTON
roger.lawton@poyry.com

SCHOLARSHIP & RECRUITMENT
SHIRLEY BOULWARE
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FOUNDATION MEETING PLANNING
CHRIS SPRAGGINS
chris.spraggins@albint.com

NOMINATING
CHARLES SEWELL
charles.sewell@albint.com

FINANCE
NEAL MCDEVITT
neal.mcdevitt@ipaper.com

RECENT PAST PRESIDENTS

MIKE LYLES
International Paper, Vicksburg

CHARLES S. “CHIP” AIKEN
Retired

MIKE BRUNER
Retired

RUSSELL HARRIS
International Paper, Memphis

JOHN SMYTH
Retired

CHRIS SPRAGGINS
Albany International
BOARD OF DIRECTORS

SHIRLEY BOULWARE
Georgia-Pacific

JIM BRUCE
International Paper, Selma

TOM COUTURE
Albany International

MARIO EDEN
Chemical Engineering, Auburn University

OLADIRAN FASINA
Biosystems Engineering, Auburn University

PAM FRASIER
International Paper, Riverdale

JIM GRAHAM
ChenTreat

JIM GRESHAM
Retired

CARL GUNTER
International Paper, Prattville

JEFF HARGRAVE
Graphic Packaging, West Monroe

JEREMY HUCKABA
International Paper, Prattville

ZHIHUA JIANG
Alabama Center for Paper & Bioresource Engineering, Auburn University

ROGER LAWTON
Pöyry (Appleton) LLC

MARK KOWLZAN
Packaging Corporation of America (PCA)

ROY MCAULEY
APPCO/Manufacture Alabama

MARK NELMS
Electrical & Computer Engineering, Auburn University

OWEN NICHOLS
Nalco Chemical

MARK NICHOLS
Buckman Laboratories

TONY OWENS
International Paper, Memphis

JACK RICHARDSON
Austin Industrial

CHRIS ROBERTS
Auburn University

CHARLES SEWELL
Albany International

JENNIFER STACEY
International Paper, Pine Hill

MERLE STEIN
Albany International

JEFF SUHLING
Mechanical Engineering, Auburn University
### Member Companies

<table>
<thead>
<tr>
<th>New</th>
<th>ABB</th>
<th>ALBANY INTERNATIONAL</th>
<th>ASTENJOHNSON</th>
<th>NEW Austin</th>
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<tr>
<td></td>
<td>MOBILE, AL</td>
<td>ROCHESTER, NH</td>
<td>CHARLESTON, SC</td>
<td>AUGUSTA, GA</td>
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<tr>
<td>New</td>
<td>Buckman Laboratories</td>
<td>ChemTreat</td>
<td>ERCO Worldwide</td>
<td>Georgia-Pacific</td>
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<tr>
<td></td>
<td>MEMPHIS, TN</td>
<td>COLLIERVILLE, TN</td>
<td>ONTARIO, CANADA</td>
<td>ALABAMA RIVER CELLULOSE MILL ATLANTA, GA</td>
</tr>
<tr>
<td>New</td>
<td>NEW Graphic Packaging International</td>
<td>NEW Graphic Packaging International</td>
<td>NEW Graphic Packaging International</td>
<td>INTERNATIONAL PAPER</td>
</tr>
<tr>
<td></td>
<td>AUGUSTA MILL AUGUSTA, GA</td>
<td>MACON MILL MACON, GA</td>
<td>WEST MONROE MILL WEST MONROE, LA</td>
<td>PENSACOLA MILL CANTONMENT, FL</td>
</tr>
<tr>
<td>New</td>
<td>INTERNATIONAL PAPER</td>
<td>INTERNATIONAL PAPER</td>
<td>INTERNATIONAL PAPER</td>
<td>INTERNATIONAL PAPER</td>
</tr>
<tr>
<td></td>
<td>PINE HILL MILL PINE HILL, AL</td>
<td>RIVERDALE MILL SELMA, AL</td>
<td>PRATTVILLE MILL PRATTVILLE, AL</td>
<td>COLUMBUS MILL COLUMBUS, MS</td>
</tr>
<tr>
<td>Company</td>
<td>City/Location</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>-------------------------</td>
<td>------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International Paper</td>
<td>Prattville, AL</td>
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<td></td>
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</tr>
<tr>
<td>Kemira</td>
<td>Atlanta, GA</td>
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<tr>
<td>Manufacture Alabama</td>
<td>Milton, AL</td>
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<td></td>
<td></td>
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<tr>
<td>PCA</td>
<td>Counce Mill, Counce, TN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCA</td>
<td>Deridder Mill, Deridder, LA</td>
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<tr>
<td>PCA</td>
<td>Jackson Mill, Jackson, AL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCA</td>
<td>Valdosta Mill, Clyattville, GA</td>
<td></td>
<td></td>
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<tr>
<td>Solenis</td>
<td>Prattville, AL</td>
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<tr>
<td>TAPPI Gulf Coast Section</td>
<td>Duluth, GA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valmet</td>
<td>Demopolis Mill, Demopolis, AL</td>
<td></td>
<td></td>
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<tr>
<td>WestRock</td>
<td>Mahrt Mill, Phenix City, AL</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>WestRock</td>
<td>Birmingham, AL</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>WestRock</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yates</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
As president and chief executive officer of Georgia-Pacific, Christian Fischer leads one of the world's leading manufacturers and marketers of tissue, packaging, pulp, paper, cellulose, nonwovens, building products and related chemicals. With innovation at its core, Georgia-Pacific is a company of principled people focused on innovation that supports local economies and a preferred partner for customers, employees and the communities it serves. With over 30,000 employees, the company operates in more than 30 states in 150 locations.

Christian assumed his current role in 2017. Previously, he served as executive vice president of the packaging and cellulose segment, responsible for GP's containerboard and kraft paper, corrugated packaging, bleached board and cellulose (pulp) businesses for seven years. He started his career with the company in 1989 as a market pulp sales manager in Europe. He relocated to Atlanta in 1992, where he advanced through the ranks in market pulp and containerboard sales.

Within the paper industry, Christian is an active board member with the American Paper and Forest Association. Locally, he chairs the board for the Atlanta International School, and is an active member of the executive committee for the Atlanta Metro Chamber board. He recently accepted a position for the Board of Councilors of The Carter Center.

Educated at the University of Hamburg in Germany, Christian and his wife, Anke, are the parents of four children and reside in Atlanta.
2018 SPRING GOLF TOURNAMENT

The Annual APPF Golf Tournament was held at the Auburn University Club. The club staff did a fantastic job in hosting our event. The golf course was in great shape and the weather was perfect, making this another successful tournament.

Our sponsors once again helped make the event successful. Lunch was provided by Yates. Austin Maintenance and Construction sponsored dinner. Jay Industrial Repair provided drink for the players while on the course. Buckman sponsored the putting contest with the donation of an Apple iPad. Hargrove and Associates sponsored a hole in one prize with the donation of a YETI cooler.

Thank you to Yates, Austin, Jay Industrial, Buckman and Hargrove for their generosity, support for the foundation and commitment to making this tournament successful!

There were thirty teams that registered for the tournament, a record year! Seven of these teams registered at the corporate level with the remainder at the company level. Gross proceeds from the event exceeded $45,000 allowing nearly $35,000 to be applied to scholarships. This is a great accomplishment!

As always, the competition on the course was fierce and yielded the following winners:

<table>
<thead>
<tr>
<th>Gross</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Albany International</td>
</tr>
<tr>
<td>2nd</td>
<td>IP Riverdale #2</td>
</tr>
<tr>
<td>3rd</td>
<td>Morgan Stanley</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Net</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Yates</td>
</tr>
<tr>
<td>2nd</td>
<td>Nalco</td>
</tr>
<tr>
<td>3rd</td>
<td>Rockwell Automation</td>
</tr>
</tbody>
</table>

I would like to offer a special thank you to all the mills and companies that support this event each year. It wouldn't be the continued success it has been without all of their participation! Please encourage other mills and companies to come join us next year. We have plenty of room to grow this event and provide even more scholarship dollars to Pulp and Paper students!

We are already planning for next year and will once again host the 2020 spring golf tournament at Auburn University Club. Go ahead and mark your calendar for Tuesday April 14, 2020!

Thank you for your continued support!!

MERLE STEIN
2019 SCHOLARSHIP & RECRUITMENT UPDATE

The Pulp and Paper option was established at Auburn University to serve the industry and provide talented and well-prepared professionals for entry-level positions in manufacturing, sales, consulting and related fields. The Scholarship & Recruitment committee works to make sure both students and member companies receive value from the Pulp and Paper program. We want students to understand the vast and innovative opportunities that our industry offers. We want member companies to have access to the best and brightest students who are going to move the industry forward.

This Fall we have 61 students on pulp and paper scholarship, of which 22 of them are looking forward to joining our industry after graduating this academic year. Along with chemical, mechanical and electrical engineering students, for the first time we will have biosystems engineering students on scholarship. We have a total of 5 (2 Junior; 2 Sophomore; 1 Freshman) students on scholarship majoring in Biosystems Engineering. Member companies will have the opportunity to interview and meet students at our dedicated job fair and interview day during the Fall activities.

Each year the committee strives to make progress towards its goals to recruit talented and diverse students, increase interaction of students with member companies and ultimately retain them in the industry. Member companies can visit the “members only” section available on the Auburn Pulp & Paper Foundation website to access a recruiting toolkit. This toolkit provides contacts, template and calendar of important events around scholarship dates and recruitment activities. The committee will work with member companies to coach them through what is needed for each recruitment effort. This year, events are planned for International Paper at Prattville, AL and Georgia-Pacific at Alabama River Cellulose, Perdue Hill, AL. Member representatives also spoke at National Society of Black Engineers meeting and will look for opportunities to speak to various Freshman “intro” classes this Fall.

The scholarship and recruitment committee welcomes members passionate about students and the industry to help attract students to the program and ultimately connect with member companies. Please contact Shirley Boulware at Shirley.boulware@kochind.com if interested in joining the committee.

ALUMNI SPOTLIGHT

Decatur, Alabama native Hannah Kuhr was awarded the APPF scholarship and graduated in 2012 with a degree in chemical engineering and a specialization in pulp and paper engineering. Since graduating she has worked at the International Paper Riverdale Mill with experience in process engineering and pulp mill maintenance and operations. Hannah currently works as the manufacturing excellence leader responsible for managing process engineers and co-op students as they work on deliberate improvement projects across the mill.
SENIOR SCHOLARSHIP STUDENTS

TYLER BALLARD  
ELECTRICAL ENGINEERING

WESTON BECK  
MECHANICAL ENGINEERING

COLE DIXON  
CHEMICAL ENGINEERING

CODY DOBBINS  
CHEMICAL ENGINEERING

DAVID EISON  
MECHANICAL ENGINEERING

BEN HAYMON  
CHEMICAL ENGINEERING

TRISHA HO  
CHEMICAL ENGINEERING

JACOB HOLLAND  
CHEMICAL ENGINEERING

LEXI IVAN  
CHEMICAL ENGINEERING

HENRY MITCHELL  
CHEMICAL ENGINEERING

ERIN NALLEY  
CHEMICAL ENGINEERING

BROOKS PEACOCK  
CHEMICAL ENGINEERING

ISABEL PERRY  
MECHANICAL ENGINEERING

LEX POPE  
CHEMICAL ENGINEERING

JONATHAN POPE  
ELECTRICAL ENGINEERING

PHILIP SMITH  
CHEMICAL ENGINEERING

TUCKER SPARKS  
CHEMICAL ENGINEERING

RUSSELL THOMAS  
CHEMICAL ENGINEERING

JONATHAN WOOD  
CHEMICAL ENGINEERING

CONGRATULATIONS,  
CLASS OF 2020!
## 2018 Financial Summary Statement

### Support and Revenue

<table>
<thead>
<tr>
<th>Source</th>
<th>Spendable Accounts</th>
<th>Scholarship Accounts</th>
<th>Endowment Accounts</th>
<th>Foundation Total Year To Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate contributions</td>
<td>$240,000.00</td>
<td>5,000.00</td>
<td>$1,101,157.85</td>
<td>$1,346,157.85</td>
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<tr>
<td>Income from Services</td>
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<td>$22,500.00</td>
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<tr>
<td>Interest</td>
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<td>$2,345.10</td>
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<td>$3,193.40</td>
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<tr>
<td>Individual Contributions</td>
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<td>$200.00</td>
<td>$200.00</td>
<td>$3,609.96</td>
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<td>Contributions</td>
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<td>$7,545.10</td>
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<td>Endowment earnings distributed to spendable accts</td>
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<td>$75,187.99</td>
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<td>$75,187.99</td>
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<tr>
<td>Endowment earnings (Current Yr) added to Principal</td>
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<td></td>
<td>$2,033.67</td>
<td>$2,033.67</td>
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<tr>
<td>Conference Registrations</td>
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<td></td>
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<tr>
<td>Fund Raiser (Golf / Auction) Revenues</td>
<td>$19,361.76</td>
<td>$34,082.17</td>
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<td>$53,443.93</td>
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<tr>
<td>Revenues</td>
<td>$285,920.02</td>
<td>$116,815.26</td>
<td>$1,103,391.52</td>
<td>$1,506,126.80</td>
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</tbody>
</table>

### Total APPF Income

|                     | $306,407.89        | $72,889.66          | $181,839.42        | $1,506,126.80                |

### Expenses

<table>
<thead>
<tr>
<th>Category</th>
<th>Spendable Accounts</th>
<th>Scholarship Accounts</th>
<th>Endowment Accounts</th>
<th>Foundation Total Year To Date</th>
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<tbody>
<tr>
<td>Scholarship grants to Auburn University</td>
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<td>$246,085.00</td>
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<td>$246,085.00</td>
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<tr>
<td>Conference Expenses</td>
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<td>Printing</td>
<td></td>
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<td>Professorships</td>
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<td>Fund Raising Fees</td>
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<tr>
<td>Tuskegee Program Support</td>
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<tr>
<td>Other</td>
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<tr>
<td>Total Expenses</td>
<td>$15,030.30</td>
<td>$246,085.00</td>
<td></td>
<td>$261,115.30</td>
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</table>

Excess of revenue over expenses    $270,889.72 $194,199.74 $1,103,391.52 $1,245,011.50

Interfund Transfers $3(298,952.25) $98,752.25 $200,000.00 $200.00

Net assets, July 1, 2017 $329,326.52 $200,182.64 $2,115,780.04 $2,645,289.20

Net assets, as of June 30, 2018 $301,263.99 $169,665.15 $3,419,171.56 $3,890,100.70
MEMBERSHIP & DEVELOPMENT

Thanks to an increase in our Member Company’s contributions of over 15%, we have been able to increase the scholarship level to over 60 in 2019. Fortunately, we have new Members which will help to increase the scholarship pool. New mills include International Paper at Pensacola, Vicksburg, and Columbus. Also, the Graphic Packaging mill in Augusta has joined their sister mills in Macon and West Monroe as members. New supplier members include ABB, ERCO, and Solenis.

As you spend time with the students, you realize the importance of the APPF scholarships and the effect they have on young lives. With rising college costs, they help bridge the financial gap to allow many of the most promising students to attend Auburn. The payback to the Paper Industry comes quickly. These young engineers soon graduate to join the more than 320 other engineers the Foundation has helped, in contributing to the future of our industry.

Members benefit by being able to nominate a Mill Scholar, which provides positive local publicity, as well as having early access to the students. This includes interview sessions weeks before the main sessions companies have through the school. This can assist with internships, co-ops, and hiring for full time positions. Everyone has received help along the way in their career.

The members of the Foundation are given the opportunity to give back, through their assistance to our students and by mentoring. We welcome new members and having history with Auburn is not a prerequisite. Members have a variety of opportunities to contribute their time and talent from participating in the on campus events, to working on a committee (like M&D), to serving on the Board. The events like the Spring Golf Outing and the Annual Fall meeting are great ways to get to know the students in the Pulp & Paper program.

The Foundation is indebted to our Director, Dr. Jiang, for his help and support, as well as Dr. Eden in the Chemical Engineering area. We are also grateful to the Auburn University Engineering Dept. staff, notably Naomi Gehling, for her innovative and creative work. The work of these individuals, groups and the many other volunteers who helped with their time, manual labor and financial support made for a very successful year in 2019!

BECOME A FOUNDATION MEMBER

If you are a part of the Pulp and Paper Industry, there is no reason why you should not be a part of the Auburn Pulp and Paper Foundation and gain access to Members Only events and recruiting efforts.

To apply for membership visit wp.auburn.edu/appf and select Foundation Membership
This has been another exciting year for the Auburn Pulp and Paper Foundation (APPF) and Alabama Center for Paper and Bioresource Engineering (AC-PABE).

First, I would like to congratulate Mr. Kevin Walls, President of APPF, and the entire APPF team for achieving remarkable growing momentum over the course of the year. The foundation added six mills/companies to its list of members, elected several prominent industry leaders to its board of directors, including Mark W. Kowlzan, PCA’s Chairman & Chief Executive Office, and again raised record levels of funding, including growing endowments by as much as $1.3 M. These funding levels allowed us to continue our mission of providing highly skilled entry-level engineers to the pulp and paper, and allied industries. APPF also strengthened its efforts to inspire students to enter the pulp and paper program at Auburn University through hosting various community events such as high school pulp & paper career days at pulp & paper mills, and on-campus events such as interviews for internships, co-ops & entry level positions in October and a pulp and paper industry seminar for undergraduate students in January. The strong team efforts of APPF are paying great dividends. Student enrollment in the APPF scholarship program is over 60 for the first time in years.

Thanks to the strong support from APPF, the Department of Chemical Engineering, and the Samuel Ginn College of Engineering, the center has been also making good progress in enriching our pulp and paper program curriculum. Starting this fall, we will add a new course, “Introduction to Pulp & Paper Engineering” (ENGR 1110) to be taught by Dr. Bill Josephson and we will launch a new graduate program, “Graduate Certificate in Pulp and Paper Engineering”. We also continue developing an innovative R&D program toward becoming a national recognized program focused on industrial technology needs and the integration of research and education in the areas of pulp & paper and engineering of lignocellulosic biomass. We have developed a patent-pending process to improve the effectiveness of the kraft pulping process. The approach involves the addition of a phenol to the kraft pulping process. We have successfully demonstrated the feasibility of an integrated bioconversion of paper mill sludge to chirally pure lactic acid, a high value chemical with its most dominant application in biodegradable and biocompatible polylactic acid polymers, the second highest consumption volume of any bioplastic of the world. In collaborating with USDA Aquatic Animal Health Research Unit, we have developed an integrated process for utilizing soy hulls as animal feed binder and for producing high alpha cellulose. Over the course of the year, we have engaged and mentored 4 undergraduate students and 3 high school students in our research and our 4 PhD students are making good progress in their research too (See highlights of the research activities of our graduate students below). We are strengthening the ties between the center and industry by actively providing now-well-received technical training, services and support to several pulp and paper companies/mills.

Let us continue marching together into the exciting future!
HIGHLIGHTS OF THE GRADUATE STUDENTS RESEARCH ACTIVITIES AT AC-PABE

AMOD DILIP PARKHI
(PhD Student, Advisors – Drs. Selen Cremaschi and Zhihua Jiang)


Present research activity: Simulation model of an Elemental Chlorine Free (ECF) bleaching section was prepared for the softwood in WinGEMS software. Parameters tracked through this simulation were kappa number, pulp brightness and COD.

Future work: to simulate bleaching and paper machine operations together to track the non-process elements (NPEs) and study the effects of NPEs on the performance of the bleach plant and the paper machine.

Project 2: Capturing and Utilizing CO2 in Pulp and Paper Mills

Present resent activity: ASPEN Plus simulation for CO2 capture from the lime kiln flue gases was developed using Monoethanolamine (MEA) solvent. This work conducts the techno-economic analysis of the CO2 capture, including a cost analysis for CO2 capture using ASPEN Capital Cost Estimator (ACCE). The work further investigates possible steam integration for the stripper steam from within the pulp and paper mill and the effect of this integration on the carbon dioxide capture.

Future work: To extend this study to the other two sources of CO2 emissions from the pulp and paper mills: recovery boiler and bark boiler.

Recent oral and poster presentations made:
1. Parkhi, A., Cremaschi, S., Jiang, Z., Innovative water recycle strategies for reducing water and energy use in pulp and paper industry, Auburn Research Student Symposium, Tuesday April 9, 2019, Auburn, AL. (Poster)


PULP & PAPER SUMMER INTERNSHIPS

To strengthen pulp & paper outreach towards high school students, AC-PABE started to offer summer internship opportunities for high school students and hosted three outstanding high school students from two local high schools (Auburn High School and Prattville High School) for the first time during this summer. We will continue to provide such an opportunity each summer.

In performing this outreach, we hope to stimulate interest in the pulp & paper industry among students still in high school. This could increase enrollment in pulp & paper-related college programs and help make students more aware of the multitude of career and financial aid opportunities offered by pulp & paper companies.

If you know a student who would be interested in this opportunity please have them email their resume and a letter of interest to Dr. Zhihua Jiang at zzj0012@auburn.edu.

COMING SUMMER 2021: AU PULP & PAPER EXPERIENCE

A 3-day summer outreach program for junior & senior high school students.

Look for more information soon!
Subject: Valorization of Lignocellulosic Materials: Designing, Synthesis and Processing of Functional Polymer Nanocomposites

Project 1: Cellulose Nanocrystal and Lignin Based Transparent and Homogeneous UV Protection Films

Present research activity: In the context of valorization of kraft lignin (KL) produced from the pulp and paper industry, biodegradable and UV protection films were designed using KL and cellulose nanocrystals (CNC). Initially, CNC films were optimized for improving their transparency by studying the effect of various sodium hydroxide (NaOH) concentrations. Maximum (%) transmittance of CNC film was obtained for NaOH addition between 3 to 4 wt. %. The optimized CNC suspensions were used for incorporating KL in various concentrations (1 to 10 wt.%). Morphological characterization showed homogeneity of the KL distribution in CNC/KL films. Complete UV blocking was achieved at 10 wt.% KL in CNC films. Cross polarized optical microscopy and scanning electron microscopic images of films showed some degree of global alignment of CNC rods upon addition of NaOH, which remained unaffected by KL addition. KL modification through acetylation reduced color and improved visible light transmission of films without significantly affecting the UV absorption properties. Presence of KL also enhanced the thermal stability of the films. This work showed for the first time that CNC aqueous suspensions with and without lignin could be tuned through the addition of NaOH to produce transparent and homogenous films, providing a simple and green approach in engineering CNC-lignin UV protection films.

Future work: CNC films will be characterized for their crystallinity to evaluate the effect of NaOH addition on its crystal structure. Various other divalent and trivalent electrolytes will also be explored for their effect on the CNC particle size, zeta potential and transparency of CNC film.

Project 2: Developing Cellulose Nanofiber and Polypyrrole Based Composite Films with Improved Performance for Electromagnetic Shielding Applications

Present research activity: Cellulose nanofiber (CNF) and polypyrrole (PPy) based flexible, strong and highly conducting composite films were synthesized through in-situ polymerization of PPy on pure CNF film and polyvinyl alcohol (PVA) coated CNF film. The proposed method showed improved conductivity and mechanical properties over the widely used approach in which composite films are prepared using in situ polymerized nanofibers. PPy/PVA-CNRF composites prepared in this study provided highest conductivity, dry and wet tensile strength and electromagnetic interference (EMI) shielding effectiveness due to its smooth and uniform PPy coating and low porosity. Physical and electrical properties of this composite film are superior to most of the cellulose-PPy based composite film properties reported in literature.

Recent publications:

Recent oral and poster presentations made:
5. Parit, M.; Saha, P.; Davis, V. A.; Jiang, Z., Novel and green approach in developing transparent, homogeneous cellulose nanocrystal/lignin UV protection films, AICHE Fall 2018 meeting, Pittsburgh, PA, 10/30/2018. (Oral)
8. Parit, M.; Saha, P.; Davis, V. A.; Jiang, Z., Transparent and homogenous cellulose nanocrystal/lignin UV protection films, Symposium on Thermal and Catalytic Sciences for Biofuels and Biobased Products, Auburn, AL, 10/09/2018. (Oral)