Cornell ChemE Car

Sponsorship Packet 2018

contents

2 About Us

4 Our Team

5 Our Sub-teams

6 The Competition

7 The Car

8 Why Contribute?

9 Sponsorship Levels

10 Contact Information

about us

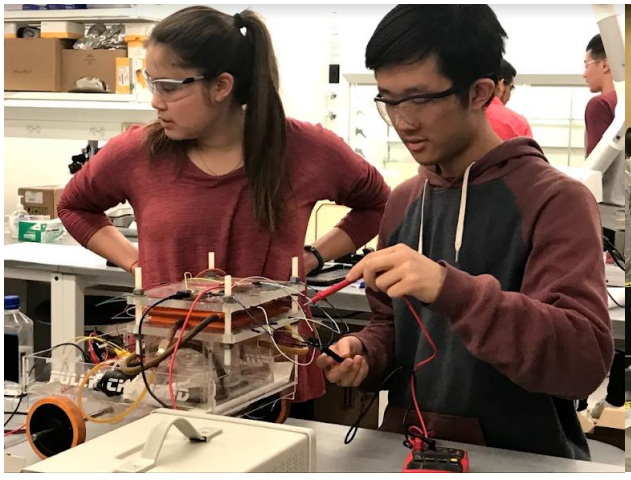
Cornell ChemE Car is a project team of undergraduate students from various engineering majors. Our goal is to build a shoebox-sized car powered by chemical reactions and a self-stopping mechanism.

Our team is entirely student-run and made up of roughly 40 members. We create an opportunity for engineering students to apply the theoretical knowledge they learn in class to develop practical solutions for real-world problems.

Every year, we compete in the Northeast Regional, and following qualifying performance, the National Chem-E-Car competition organized by the American Institute of Chemical Engineers (AIChE). With our 2015 Nationals win, we became the first university to have won four National championships.

All ChemE Car members work in smaller, specialized sub-teams under the guidance of a sub-team leader. Each year, we design and build multiple cars, often sending two to regionals and one—chosen from a car-off—to the Nationals.

Each year, we redesign the power mechanism of our car following months of research and testing. Our members are highly motivated, dedicated, and skilled. However, to build these cars every year and perform well at the competition, we rely on the support of our donors. We graciously accept monetary donations, but also welcome parts for use in design and calibrations.



NORTHEAST REGIONAL TITLES

We placed first place in the Northeast Regional competitions in 2011, 2013, 2014, 2015, and 2016, becoming the only university to win 4 consecutive titles.

NATIONAL TITLES

We brought home the first place win in 2008, 2010, 2012, and most recently, 2015. This is also a record for the competition.

At the 2008 and 2012 Nationals, our cars Bender 4.0 and Zapdos, respectively, stopped exactly on the line, setting the national record for ChemE Car.

Over the years, our team demonstrates highly consistent performance. We were recognized for this in both 2009 and 2011 at the “Most Consistent” team.

In 2013, we also won the Albert R. George Student Team Award.

our team

The ChemE car team at Cornell was founded in 2004. Our early power mechanisms included homemade batteries housed in sewing boxes, a wooden chassis, and rollerblade wheels. We have come a long way since then.

Our team is organized to allow streamlined design and development. As all members have rigorous academic commitments with frequent deadlines, we prioritize efficiency and a work ethic that promotes efficiency.

Our team is led by our senior and junior captains. Both are elected in team-wide elections. Each sub-team also has a sub-team leader elected by the sub-team members; these sub-team leaders and the two captains form the leadership.

We have 8 sub-teams. Each is either a power or a support team. The team is divided power and support teams. The power teams focus on different methods of generating power, while the support teams design and construct a car and stopping mechanism that will work with the chosen method of power generation.

our sub-teams

Power teams

Battery Alpha
Focuses on developing battery technology to power an electric motor.

Battery Omega
Develops a different battery technology to power a motor.

Pressure
Currently looking in to reactions that produce high-pressure gas.

Thermoelectric Generation
Uses TEG plates to generate electricity.

Support teams

Potions
Designs and implements highly precise chemical reactions to stop the car.

Mechanical
Designs and builds the chassis and all hardware for the car.

Business
Manages all the financial and administrative tasks for the rest of the team.

Electronics
Converts the electricity generated by the power teams to run the car.

The Chem-E-Car regional and national competitions are hosted by different universities every year. After weeks of calibrations, a group of approximately 10 students travels to competition.

The Competition

- Poster session
- 2 Runs
- Distance: 50-100 feet
- Load: 0-500 mL
- Time limit: 2 minutes

The goal during each round of the competition is for the car to travel a certain distance while carrying a load under 2 mins as accurately as possible. The distance and load are announced just before the competition, meaning the performance of the car must be highly flexible. Of course, the primary qualification of any car is safe operation. Power mechanisms that release unsafe gases, for example, are inadmissible.

Our car itself must be within 40 cm × 30 cm × 18 cm, and must be powered by a chemical reaction. More importantly, it must not have any brakes or mechanical stopping devices. Each year, our sub-teams come up new ways to implement various chemical power generation methods followed by weeks of testing. For any given power mechanism, all support teams work together to design and construct a car that can meet competition goals safely.

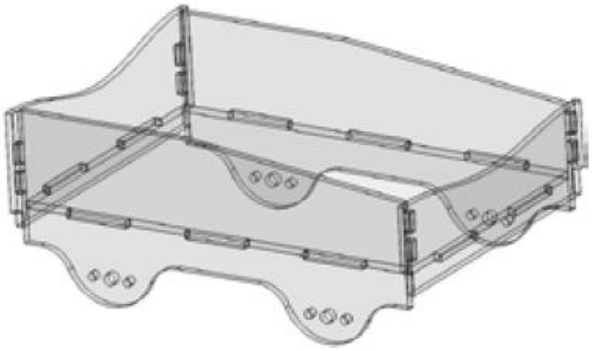
the competition

the car

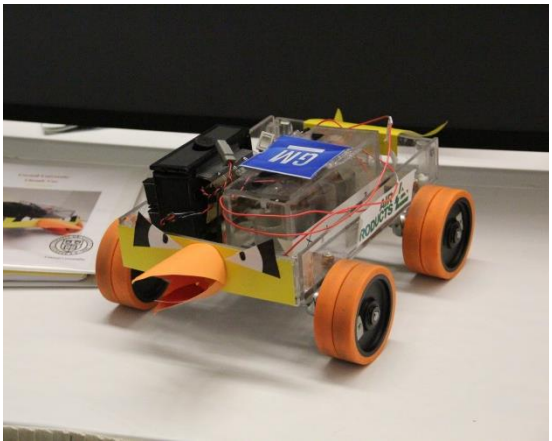
One of the primary goals of our team is to catalyze and inspire undergraduate research and development in the application of alternative energy sources. Every year, we invest in research to incorporate biological, pressure, and thermoelectric power generation systems into working cars. Batteries and fuel cells have powered our most successful cars.

For each new design, we conduct a team-wide design review; every member of the team, regardless of sub-team affiliation, will understand the power mechanism and design parameters, then offer suggestions for improvements or raise safety concerns. Further, our Safety team works with the power team and relevant support teams to meticulously identify any potential safety hazards, their severity, and mitigation strategies. All this information is verified by our faculty advisor, Professor Abraham Stroock. Cars are only considered for competition upon ensuring the safety of all the members.

A general design for our car base is shown to the right. Our Mechanical sub-team designs (CAD) and constructs the chassis using laser cutting and 3D printing. In addition, our car includes a potions box (light proof), motor and gearboxes, and appropriate containers to contain the power mechanisms.



The first two images below show our cars from 2011 and 2012. The image above right shows a schematic of our most recent car, Drifter; Drifter won the 2015 National Championship.



Cornelll ChemE Car has high visibility at Cornell University and the chemical engineering field. We recruit new students every year, and are one of the most successful and prestigious project teams at Cornell. We have a national record in championship titles; our deliver highly consistent and excellent performance.

This visibility can be used to promote your brand at competitions at Cornell and across the United States.

We have a growing Facebook page, weekly newsletters to alumni and outreach programs at Cornell, and a website that features our sponsors. Our team is also dedicated to outreach and community services—our members represent our team and sponsors in various events on the Cornell campus and the Ithaca area.

Help further our team's mission of bringing students together to create valuable experiences through innovative engineering.

why contribute?

sponsorship levels

Platinum (Over $5000)

First priority in company info-session hosting with the team
Team picture with the car and logo
Thank you mention during competition speeches
All Gold-level benefits

Gold ($3000 - $4999)

Logo on Car
Priority in company info-session hosting with the team
Logo prominently placed in all newsletter and alumni correspondence
Ad in annual Chemical Engineering yearbook
Features in team Facebook page
Prominent Logo in team display located in Olin hall
All Silver-level benefits

Silver ($1000-$2999)

Small logo on car
Special thanks in post-competition Facebook posts.
Featured on our website
Logo on the competition poster
Logo on team t-shirt
Company name, link, and logo on team website
Opportunity for company info-session hosting with the team
Access to the team resume book
Recognition in both of the semiannual newsletters
All Bronze-level benefits

Bronze (up to $1000)

Features on team website
Recognition in next newsletter
Company logo will be displayed at team fundraising events

contact us

address: 120 Olin Hall
Cornell University
Ithaca, NY 14853

email: chemecar@cornell.edu

website: chemecar.engineering.cornell.edu

facebook: facebook.com/Cornell.ChemE.Car