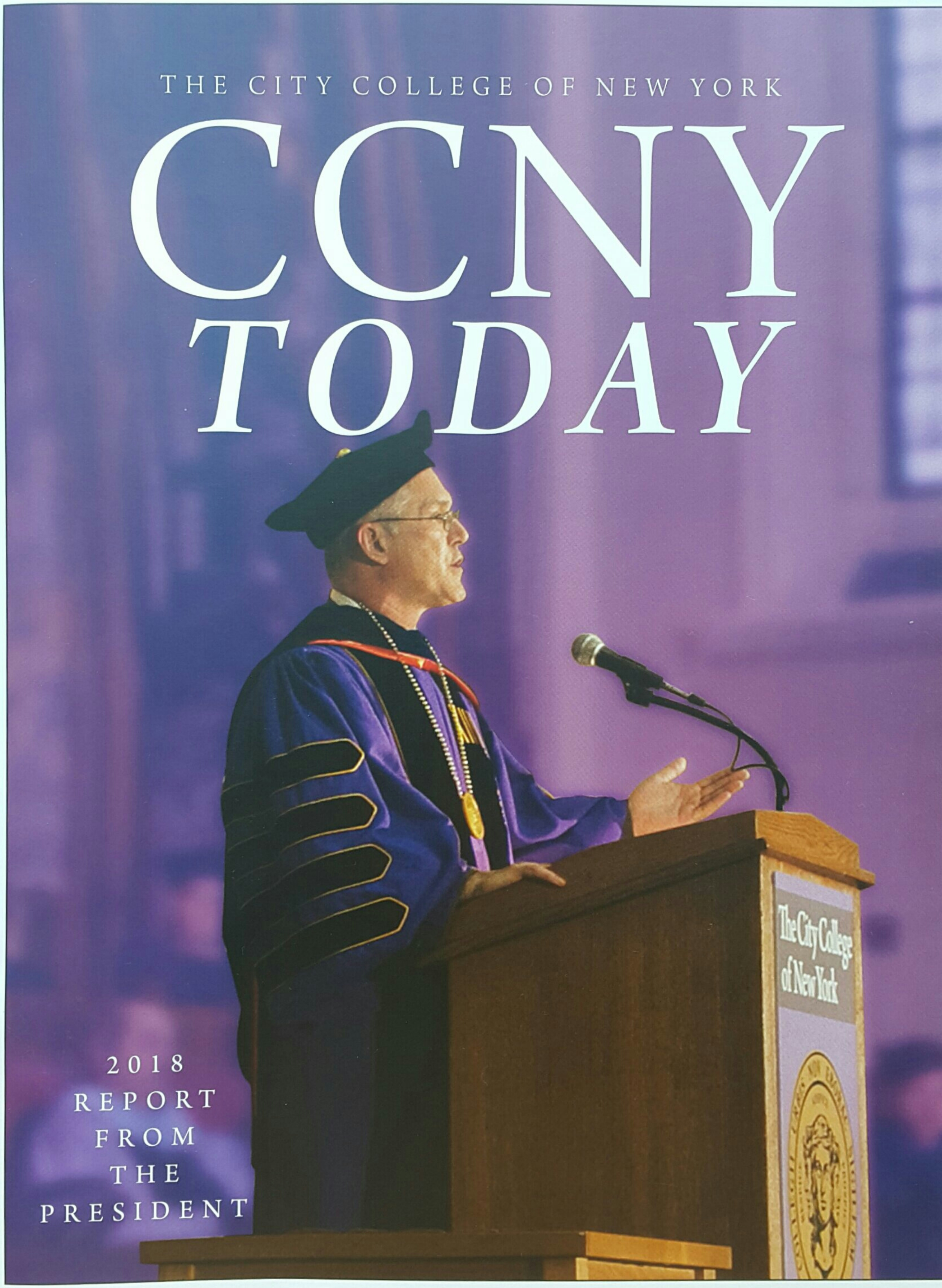
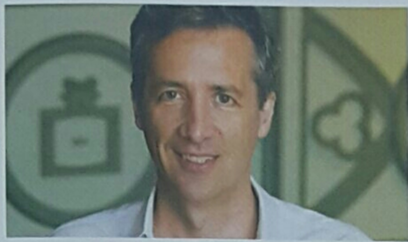
THE CITY COLLEGE OF NEW YORK

CCNY *TODAY*

2018 REPORT FROM THE PRESIDENT





TO UNDERSTAND THE INFLUENCE OF FAKE NEWS, CALL A…PHYSICIST?

In early April, Mark Zuckerberg spent two long days on the defensive in his testimony before Congress, trying among other things, to explain how fake news on Facebook might have influenced the Presidential election.

Perhaps Congress should have called Professor of Physics Hernan Makse, whose expertise in the theoretical and computational understanding of complex systems recently led to the publication of an investigation of the influence of fake and traditional, fact-based news outlets on Twitter during the 2016 US presidential election.

Makse used a comprehensive dataset of 171 million tweets covering the five months preceding Election Day, identifying 30 million tweets, sent by 2.2 million users, which were classified as spreading fake and extremely biased news, based on a list of news outlets curated from independent fact-checking organizations, and traditional news from right to left.

Perhaps unsurprisingly, the study demonstrated that contrary to traditional news, where influencers are mainly journalists or news outlets with verified Twitter accounts, e.g. @FoxNews and @CNN, the majority of fake news influencers identified had unverified or deleted accounts.

But then there was this: The study shows that not only were fake news sources mentioned as frequently as traditional outlets, but fake or biased news moved in significantly different directions, depending on the political slant. Two different news-spreading mechanisms were revealed. The influencers spreading traditional center and left leaning news largely determined the opinion of the Clinton supporters. But to the researchers' surprise, they found that right-wing voters tended to influence the output of people producing fake news tweets, not the other way around.

HOW DO PLANTS AND BACTERIA DO IT?

One of nature's most spectacular molecular architectures is found in the highly efficient solar light harvesting apparatus of photosynthetic plants and bacteria. While they have been studied extensively, the origin of their tremendous energy transport efficiency has remained a mystery. The problem is challenging. The light harvesting complex's structure is not rigid, and the molecular components are continually moving. The role that this motion plays in facilitating (or impeding) energy transport is unclear.

With support from the National Science Foundation, Associate Professor of Chemistry Dorthe Eisele is synthesizing and investigating bio-inspired nanomaterials that mimic the interesting features of natural light harvesting complexes. She and her team aim to watch the flow of energy through those new molecular assemblies using super high-resolution microscopy, with the goal of understanding how structural fluctuations affect energy transport.

With her project, Eisele won an NSF Faculty Early Career Development (NSF CAREER) Award. According to the Foundation, this program "offers NSF's most prestigious awards in support of early-career faculty who have the potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization." The NSF thinks Dorthe Eisele is definitely one to watch. We agree.

DR. EISELE IS ONE OF THREE JUNIOR FACULTY AT CCNY TO RECEIVE PRESTIGIOUS RESEARCH AWARDS THIS YEAR. CHEMICAL ENGINEER ELIZABETH BIDDINGER AND CIVIL ENGINEER NARESH DEVINENI EACH RECEIVED AN EARLY CAREER AWARD FROM THE U.S. DEPARTMENT OF ENERGY.

CCNY LEADS INTERNATIONAL COMPLEX FLUIDS PROJECT

Funded research at City College is so often international in scope and consequence, as well as a boon to scores of our students. Look no further than the energy project, "PIRE: Multi-scale, Multi-phase Phenomena in Complex Fluids for the Energy Industries."

A five-year research project on complex fluids with potential for transformative scientific discoveries in industries from petro-chemical to cosmetics is underway at The City College of New York's Grove School of Engineering. Funded by a $5.2 million National Science Foundation grant, the initiative includes 11 partner institutions in France, Germany and Norway.

Leading the high-tech research, under the aegis of the NSF's Partnerships for International Research and Education (PIRE) program, is Masahiro Kawaji, Professor of Mechanical Engineering and Associate Director of the CCNY-based CUNY Energy Institute.

Summing up the potential of the expansive project, Kawaji explains that it could well lead to improvements in energy and process efficiency in industrial systems on a global scale, including the development of lubricants that enable more efficient undersea drilling of oil and gas; improved processes for freezing and solidifying gas for the refrigeration industry; and more efficient manufacturing processes for cosmetics.

At CCNY, 30 students will get hands-on experience in international collaborative research at the highest level. The tally includes seven PhD candidates, three postdoctoral fellows, 10 graduates and 10 undergraduates over the five years. Every summer, two undergrads will have the opportunity to engage in research at one of PIRE's European partner institutions. Other foreign research experience includes attendance at annual review meetings in New York City, Norway, France and Germany, and a six-month internship for all seven PhD students at institutions in Europe.