

# IEM COVID-19 NEWS & ARTICLES OF INTEREST

## IEM COVID-19 RESPONSE

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## STUDENTS DESIGN AND PRODUCE GOWNS FOR LOCAL HOSPITALS (HTTPS://CSE.UMN.EDU/BME/NEWS/STUDENTS-DESIGN-AND-PRODUCE-GOWNS-LOCAL-HOSPITALS)

### Undergrads partner with M Health Fairview to address PPE shortage



(<https://cse.umn.edu/bme/news/students-design-and-produce-gowns-local-hospitals>)

Biomedical engineering student Anna Karos models one of the protective gowns she designed and produced with her classmates in just two weeks.

**Photo credit:** Steven Saliterman

Just a few weeks ago, M Health Fairview contacted College of Science and Engineering professor (and IEM Member) **Steven Saliterman** (<https://cse.umn.edu/bme/steven-s-saliterman>) asking for help designing disposable gowns for health workers. Saliterman then assembled 18 of his biomedical engineering students.

Within two weeks, they had created a safe, functional gown design that could be rapidly manufactured for use in Minnesota hospitals. Now, local companies Red Fox Innovations and Polar Plastics are rapidly producing the gowns—at a rate of 5,000 to 10,000 per day—and shipping them to M Health Fairview clinics.

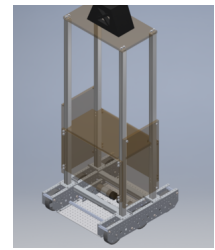
The feat was profiled in a Star Tribune story describing how students “saved local hospitals from running out of PPE.” (<https://www.startribune.com/a-gown-for-u-university-of-minnesota-students-saved-local-hospitals-from-running-out-of-ppe/570342121/>)”

Source: College of Science and Engineering (<https://cse.umn.edu/>), Biomedical Engineering (<https://cse.umn.edu/bme/home>) | May 12, 2020

WITH MNRI ASSISTANCE, UMN ROBOTICS STUDENT GROUP TO DEVELOP A ROBOT THAT ADMINISTERS MEDICAL CARE  
(HTTPS://CSE.UMN.EDU/MNRI/NEWS/MNRI-ASSISTANCE-UMN-ROBOTICS-STUDENT-GROUP-DEVELOP-ROBOT-ADMINISTERS-MEDICAL-CARE)

(<https://cse.umn.edu/mnri>) and College of Science and Engineering (<https://cse.umn.edu/>) faculty and alumni, a group of undergrad and graduate students are developing a robot with the capability of treating ER patients by performing routine tasks, such as checking a patient's temperature through the use of thermal imaging. This robot would limit human-to-human exposure in medical facilities and reduce the need for personal protective equipment (PPE), as U.S. supply is limited ... (<https://cse.umn.edu/mnri/news/mnri-assistance-umn-robotics-student-group-develop-robot-administers-medical-care>)

(04/24/2020)



(<https://cse.umn.edu/mnri/news/mnri-assistance-umn-robotics-student-group-develop-robot-administers-medical-care>)

NSF RAPID RESPONSE GRANT AWARD ([HTTPS://WWW.IEM.UMN.EDU/NSF-COVID19-LETTER](https://www.iem.umn.edu/nsf-covid19-letter))

**“RAPID: DEVELOPMENT OF AN ULTRASENSITIVE THERMAL CONTRAST AMPLIFICATION LATERAL FLOW IMMUNOASSAY FOR RAPID, POINT-OF-CARE COVID-19 DIAGNOSIS”**

John Bischof, Ph.D. (<https://cse.umn.edu/me/john-bischof>), Director, Institute for Engineering in Medicine, Distinguished McKnight University Professor, Carl and Janet Kuhrmeyer Chair, Mechanical Engineering, Medtronic-Bakken Endowed Chair for Engineering in Medicine

(April 29, 2020)

## SCIENTISTS TO STOP COVID-19

([/s/Scientists\\_to\\_Stop\\_COVID19\\_2020\\_04\\_23\\_FINAL.pdf](/s/Scientists_to_Stop_COVID19_2020_04_23_FINAL.pdf)) ([/s/Scientists\\_to\\_Stop\\_COVID19\\_2020\\_04\\_23\\_FINAL.pdf](/s/Scientists_to_Stop_COVID19_2020_04_23_FINAL.pdf))to learn more.

“... a group of passionate citizen-scientists offer four actionable, non-partisan proposals to produce safe and effective COVID-19 therapeutics and vaccines in the shortest possible timeframe, and to reopen our society in a manner that reduces the risk of future COVID-19 outbreaks.” Click **HERE**

NATURE ([HTTPS://WWW.NATURE.COM/](https://www.nature.com/))

*Nature* is a weekly international journal publishing the finest peer-reviewed research in all fields of science and technology on the basis of its originality, importance, interdisciplinary interest, timeliness, accessibility, elegance and surprising conclusions. Nature also provides rapid, authoritative, insightful and arresting news and interpretation of topical and coming trends affecting science, scientists and the wider public. Click **HERE** (<https://www.nature.com/>)to learn more.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE (AAAS) ([HTTPS://WWW.SCIENCEMAG.ORG/COLLECTIONS/CORONAVIRUS?](https://www.sciencemag.org/collections/coronavirus?))



DMC=P2BSO1EMAQL1&ET\_CID=3301660&ET\_RID=79373529&UTM\_CAMPAIGN=TBC-2020-ACQ-FOS-GLOBAL-LEAD-LIST-1&UTM\_CONTENT=EMAIL2&UTM\_MEDIUM=EMAIL&UTM\_SOURCE=MEMBERSHIP)

THE ADVANCEMENT OF SCIENCE

([https://www.sciencemag.org/collections/ccdmc=P2BSO1EMAQL1&et\\_cid=3301660&et\\_2020-acq-fos-global-lead-list-1&utm\\_content=email2&utm\\_medium=em](https://www.sciencemag.org/collections/ccdmc=P2BSO1EMAQL1&et_cid=3301660&et_2020-acq-fos-global-lead-list-1&utm_content=email2&utm_medium=em))

Visit **Coronavirus: Research, Commentary, and News**

(<http://click.aaas.sciencepubs.org/?qs=9e9298c927bc3e921008e35682053973522ace854eb8a2cb54c54736bf257905d9a1f9f285281345977e1bb1cb0a4315317d01f9738378f1>)

to find: an overview of WHO's global megatrial of four promising treatments; progress on blood tests for antibodies and what they might reveal about the outbreak; forecasts on the disease's spread to Africa; and crucial commentary from Dr. Holden Thorp, *Science's* Editor-in-Chief

University of Minnesota |  
alternative to N95 6:00 p

UNIVERSITY OF MINNESOTA DESIGN NEW MASK ALTERNATIVE TO N95 (HTTPS://KSTP.COM/CORONAVIRUS/UNIVERSITY-OF-MINNESOTA-DESIGN-NEW-MASK-ALTERNATIVE-TO-N95-MASK/5699718/)

*A team of experts at the University of Minnesota has designed a new mask that may serve as a viable alternative for health care workers if N95 masks aren't available.*

*They call their prototype an "origami mask" because it involves folding and heat-setting, without the need for sewing seams.*

*The masks are made from filters typically used in diesel engines, donated by Cummins Filtration. Because these filters are not normally used in medical equipment, they*

*would likely not encounter the same supply chain shortages as other personal protective equipment (PPE) material.*

*Researchers at the University of Minnesota ran the filters through a series of rigorous tests and found they were effective at blocking about 95% of particles in the air, even as small as viruses ...* (<https://kstp.com/coronavirus/university-of-minnesota-design-new-mask-alternative-to-n95-mask/5699718/>)

Source: *KSTP.com* | Updated: April 13, 2020 06:33pm

UNIVERSITY OF MINNESOTA TWIN CITIES DESIGNS RESPIRATOR MASK PROTOTYPES FROM FILTER TECHNOLOGY (HTTPS://TWIN-CITIES.UMN.EDU/NEWS-EVENTS/UNIVERSITY-MINNESOTA-TWIN-CITIES-DESIGNS-RESPIRATOR-MASK-PROTOTYPES-FILTER-TECHNOLOGY)

**CSE researchers play key role on the team**

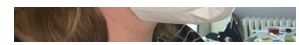
*The need for N95 masks has skyrocketed in recent weeks in response to COVID-19. To address this challenge, an interdisciplinary research team at the University of Minnesota Twin Cities has designed two respirator mask prototypes from donated filter material by Cummins and bendable components from Bedford Industries.*

*The masks — one modified anesthesia mask and one single-use*



...the masks — one integrated, reusable mask and one single-use, disposable mask — are being developed to be close to a N95-equivalent with three distinctive components in mind: ventilation, fit and resilience to supply chain fluctuations. The idea was partly inspired by a process posted on YouTube from the Boston Children's Hospital ... (<https://twin-cities.umn.edu/news-events/university-minnesota-twin-cities-designs-respirator-mask-prototypes-filter-technology>)

(April 06, 2020)



(<https://twin-cities.umn.edu/news-events/university-minnesota-twin-cities-designs-respirator-mask-prototypes-filter-technology>)

U of M Professor Linsey Griffin models the single-use, disposable mask. Photo credit: University of Minnesota.



(<https://www.nytimes.com/article/coronavirus-homemade-mask-material-DIY-face-mask-ppe.html>)

Samuel Aranda for The New York Times

#### WHAT'S THE BEST MATERIAL FOR A MASK? ([HTTPS://WWW.NYTIMES.COM/ARTICLE/CORONAVIRUS-HOMEMADE-MASK-MATERIAL-DIY-FACE-MASK-PPE.HTML](https://www.nytimes.com/article/coronavirus-homemade-mask-material-DIY-face-mask-ppe.html))

Scientists are testing everyday items to find the best protection from coronavirus. Pillow cases, flannel pajamas and origami vacuum bags are all candidates ... (<https://www.nytimes.com/article/coronavirus-homemade-mask-material-DIY-face-mask-ppe.html>)

Source: The New York Times (April 5, 2020)

#### IEM JOINS EFFORTS TO CREATE CLINICAL MASKS ([HTTPS://CSE.UMN.EDU/ME/NEWS/IEM-JOINS-EFFORTS-CREATE-CLINICAL-MASKS](https://cse.umn.edu/me/news/iem-joins-efforts-create-clinical-masks))

The Institute for Engineering in Medicine (IEM), directed by ME Professor John Bischof, is finding innovative ways to create clinical masks to address the shortage in Minnesota. IEM is testing filtration material to see what alternatives could be implemented that come close to N95 mask standards. Tests at the U have shown that a particular filter is close to the efficacy of a N95 mask, and "even the CDC will say something is better than nothing," said Bischof. This is especially true in unusual circumstances, and when the "something" is nearly as effective as the gold standard.



(<https://cse.umn.edu/me/news/iem-joins-efforts-create-clinical-masks>)

Source: College of Science and Engineering (<https://cse.umn.edu/me/news/iem-joins-efforts-create-clinical-masks>), Mechanical Engineering (<https://cse.umn.edu/me>)



(<https://kare11.com/embeds/video/89a4b23ce7-0802-450a-88b2-aa49ecbbf421/iframe?jwsourc=cl>)

Author: Kent Erdahl  
Published: 9:56 PM CDT April 1, 2020

#### MDH: WEARING HOMEMADE FACEMASKS IN PUBLIC "NOT A BAD IDEA" ([HTTPS://WWW.KARE11.COM/ARTICLE/NEWS/HEALTH/CORONAVIRUS/MDH-WEARING-HOMEMADE-FACEMASKS-IN-PUBLIC-NOT-A-BAD-IDEA/89-78BC330F-F046-489A-B3FC-2665836C6439](https://www.kare11.com/article/news/health/coronavirus/mdh-wearing-homemade-facemasks-in-public-not-a-bad-idea/89-78bc330f-f046-489a-b3fc-2665836c6439))

"How masks could help and what you need to know if you want to make your own.

Homemade masks and other face coverings could soon become a more common sight in public, as federal and state health officials consider expanding public guidance on facemasks in

"(A facemask) is not a bad idea when out in public, going to a grocery store, being around lots of other people," said Minnesota Health Commissioner Jan Malcolm, when asked about the shifting facemask guidelines on Wednesday." ...

(<https://www.kare11.com/article/news/health/coronavirus/m-dh-wearing-homemade-facemasks-in-public-not-a-bad-idea/89-7ebc330f-f046-489a-b3fc-2665836c6439>)

Source: KARE11.COM

**ITEM AND THE U ARE HELPING MINNESOTA BUILD CLINICAL MASKS**  
([HTTPS://WWW.KARE11.COM/ARTICLE/NEWS/HEALTH/CORONAVIRUS/SHOP-OWNER-DESIGNS-MASK-MADE-FROM-VACUUM-CLEANER-BAGS-VOLUNTEERS-TURNING-OUT-THOUSANDS/89-F21D2515-BAA2-4F25-8777-05217FB78F96](https://www.kare11.com/article/news/health/coronavirus/shop-owner-designs-mask-made-from-vacuum-cleaner-bags-volunteers-turning-out-thousands/89-f21d2515-baa2-4f25-8777-05217fb78f96))

**"Shop owner designs mask made from vacuum cleaner bags, volunteers turning out thousands**

Trevor Hanson's Willmar vacuum cleaner shop is now a hub of mask making.

WILLMAR, Minn. — By now we can all agree that COVID-19 sucks. The owner of AB Vacuum Center in Willmar concurs. "It's a tough deal for everybody," Trevor Hanson says. Hanson leaned in upon hearing of shortages of masks for health care workers. "I've made the joke a number of times, that I've watched too much MacGyver growing up," Hanson laughs.

Hanson knew that masks filter. But, he reasoned, vacuum cleaner bags filter too." ...

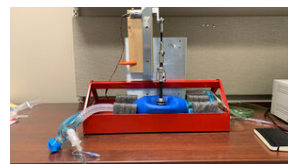
(<https://www.kare11.com/article/news/health/coronavirus/shop-owner-designs-mask-made-from-vacuum-cleaner-bags-volunteers-turning-out-thousands/89-f21d2515-baa2-4f25-8777-05217fb78f96>)

Source: KARE11.COM



(<https://www.kare11.com/article/news/health-owner-designs-mask-made-from-vacuum-cleaner-bags-volunteers-turning-out-thousands/89-f21d2515-baa2-4f25-8777-05217fb78f96>)

Author: Boyd Huppert  
Published: 10:34 PM CDT March 30, 2020  
Updated: 5:32 AM CDT March 31, 2020



(<https://youtu.be/gw5LPx6LCjc>)

Photograph: Dr. Stephen Richardson, University of Minnesota. Video: Rally Studios

**U CONSTRUCTS MAKESHIFT VENTILATORS TO FIGHT COVID-19**

([HTTPS://MED.UMN.EDU/COVID19VENTILATOR?J=8334652&JB=1&L=591\\_HTML&MID=6325307&SFMC\\_SUB=62195944&U=168825469](https://med.umn.edu/covid19ventilator?J=8334652&JB=1&L=591_HTML&MID=6325307&SFMC_SUB=62195944&U=168825469))

A Ventilator System Built For Rapid Deployment

**This device represents a rapidly scalable opportunity for healthcare providers to provide life-sustaining mechanical ventilation to patients for whom no other option currently exists.**

We aim to build a low-cost, scalable mechanical ventilator that will augment existing medical equipment to increase availability of mechanical ventilation worldwide, even in low resource areas. We believe this represents a realistic way to scale ventilator support in the face of potentially unprecedented

vendor support in the face of potentially unprecedented demand. Please support us in the fight against COVID-19.

**CONTACT IEM (/CONTACT)**

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**FAX:** 612-625-5633

**EMAIL:** [iem@umn.edu](mailto:iem@umn.edu) (<mailto:iem@umn.edu>)

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*Institute for Engineering in Medicine*

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