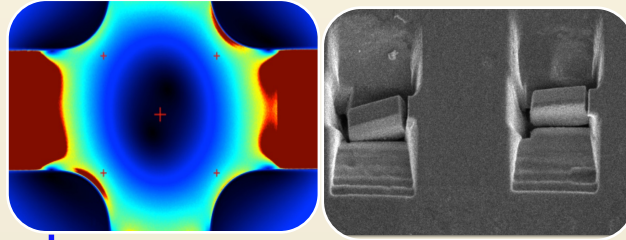


# Advancing biological & man-made systems for societal & environmental challenges

## New multiscale testing methods

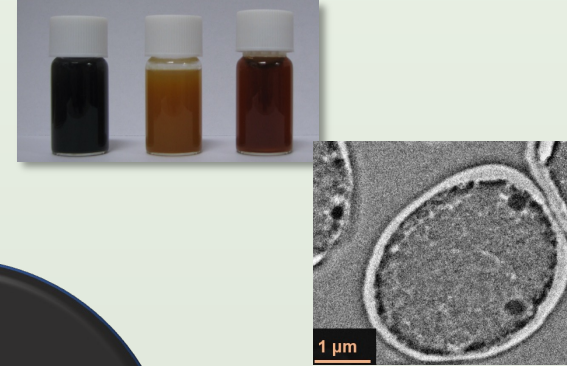
- Optics + mechanics
- Automated testing
- Data-driven experiments



Liu, Athanasiou *et al.*, *PNAS*, 2021  
Liu, Athanasiou *et al.*, *Acta Mater.*, 2020  
Athanasiou *et al.*, *Micromachines*, 2015  
Athanasiou *et al.*, *Phys Rev Applied.*, 2017

## Materials & manufacturing

- Composites
- Biomaterials
- Multiscale 3D printing
- Laser manufacturing

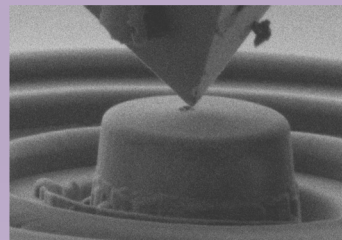


Stathatou, Athanasiou *et al.*, *Nat Com Earth & Env*, 2022  
Athanasiou *et al.*, *Carbon.*, 2021



## New deformation/failure mechanisms

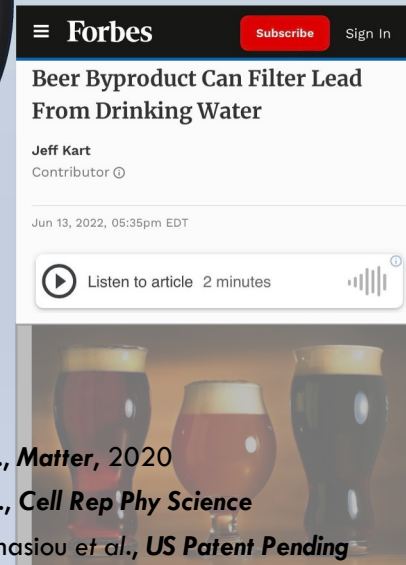
- Crack deflection criteria
- Environmentally-assisted degradation
- Chemo-mechanical failure



Athanasiou *et al.*, *JMPS*, 2022  
Nazir, Athanasiou *et al.*, *JNCS*, 2022

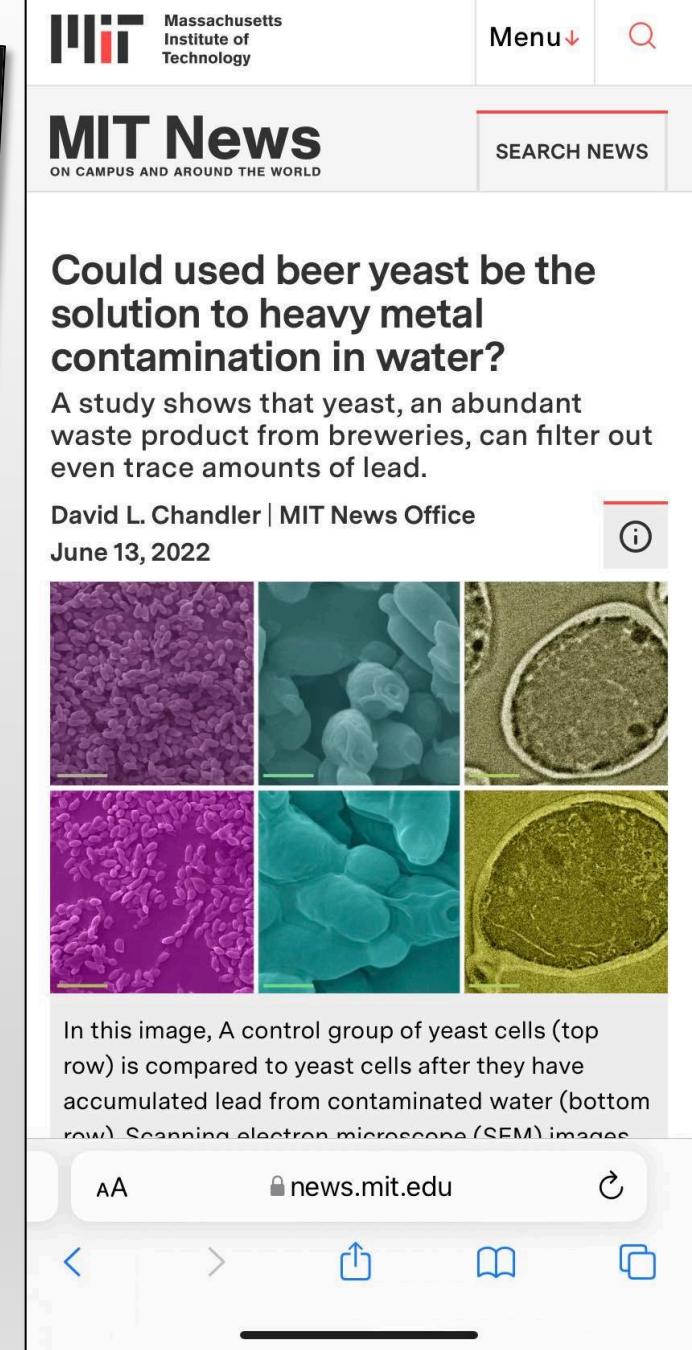
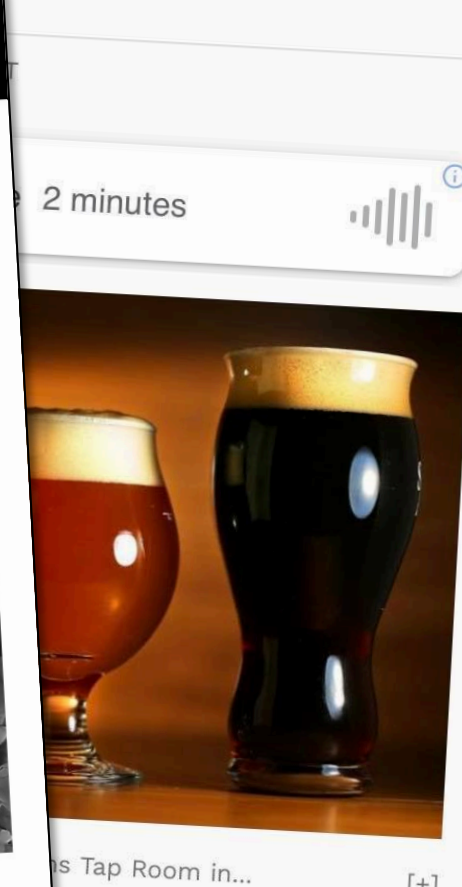
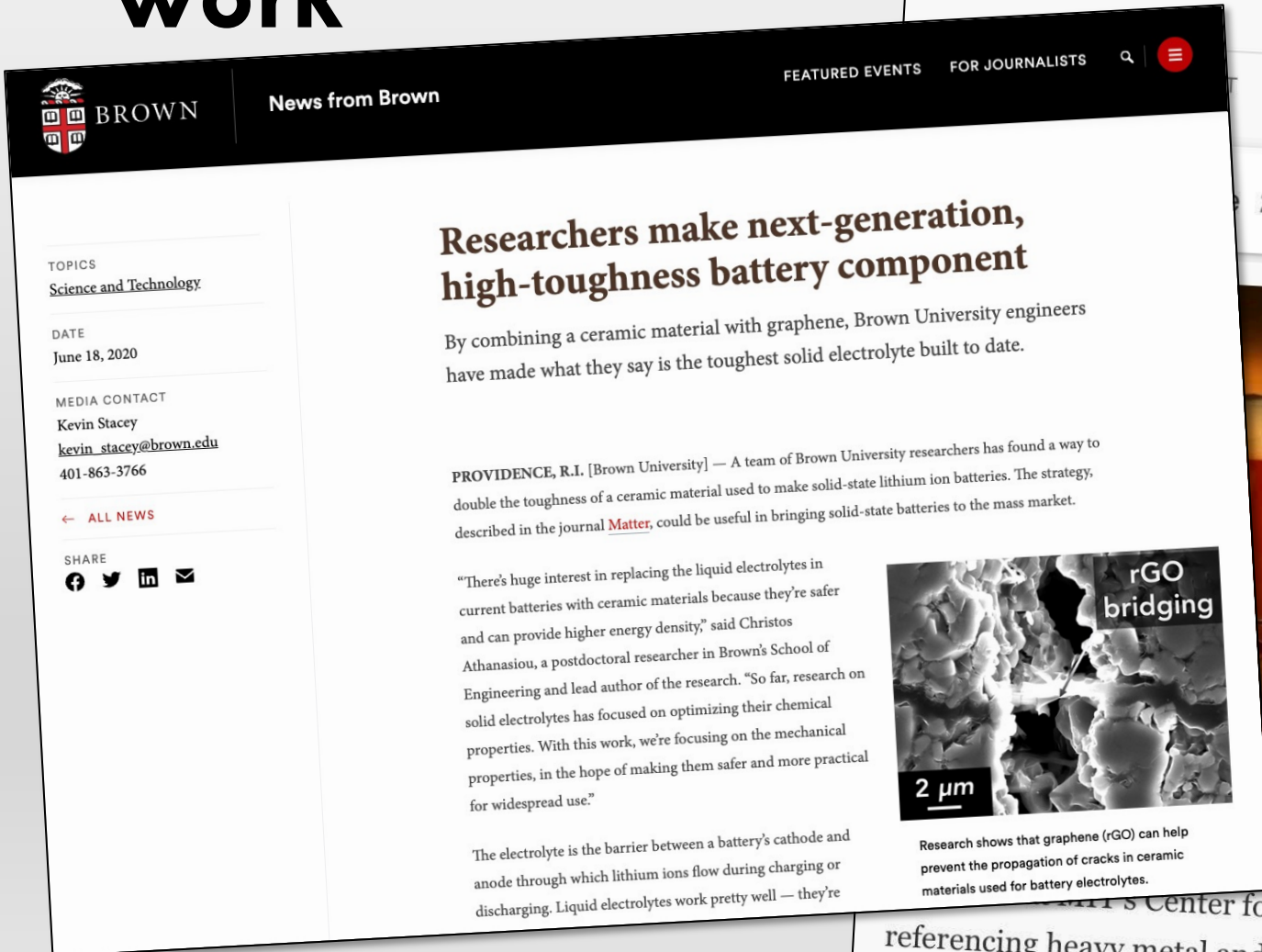
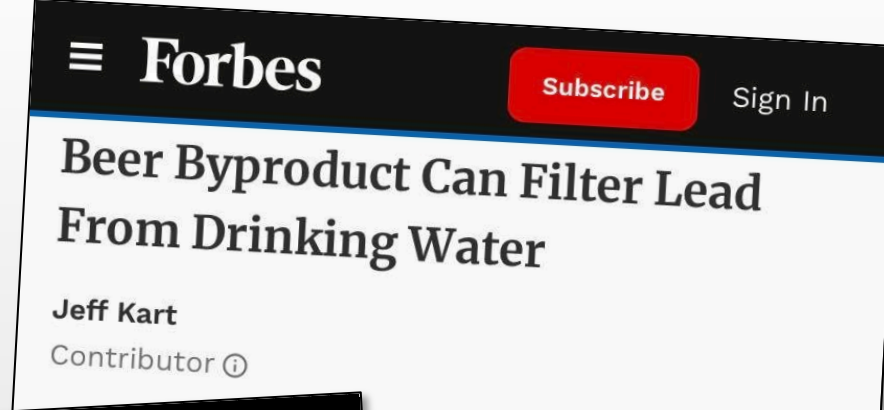
## Applications

- Solid-state batteries
- Bioremediation
- Green aviation
- Sustainable space exploration



Athanasiou *et al.*, *Matter*, 2020  
Athanasiou *et al.*, *Cell Rep Phy Science*  
Stathatou, Athanasiou *et al.*, *US Patent Pending*

# Selected media coverage of PI's work



Center for Bits and Atoms are referencing heavy metal and beer in a new study