Northwestern | PAULA M. TRIENENS INSTITUTE FOR SUSTAINABILITY AND ENERGY

SIX PILLARS OF DECARBONIZATION

CAPTURE

CO_2 from dilute sources

PILLAR THESIS

All reasonable scenarios for reducing atmospheric CO_2 to avoid the worst of climate change require some form of carbon capture and sequestration among other interventions. Northwestern is home to some of the most prolific researchers on nanoporous metal organic framework (MOF) materials—perhaps the most promising method for CO_2 capture from point sources. The Capture Decarbonization Working Group will convene stakeholders quarterly to address critical questions in research and commercial scalability, producing insight to guide the future direction of the pillar.

PILLAR CO-LEADS

Professor Randall Snurr
Expertise: Molecular modeling of novel nanoporous materials for carbon capture, gas storage, energy-efficient separations

Professor Omar Farha
Expertise: Nanoporous metal organic frameworks (MOFs) for carbon capture, gas storage, separations

AREA OF FOCUS

Northwestern will lead the development and testing of novel nanoporous materials and electro-chemical methods for carbon capture.

INTERDISCIPLINARY EXPERTISE

Interdisciplinary faculty areas of expertise include:

Carbon markets and economics | Carbon utilization | Geological storage | Lifecycle assessment | Homo/heterogeneous catalysis | Nanoporous materials | Renewable fuels and energy

Faculty collaborators have been recognized for their academic excellence through awards and affiliations:

- American Academy of Arts & Sciences
- Geological Society of America
- Clarivate Highly Cited Researchers
- Presidential Early Career Award in Science and Engineering
- Northwestern University Center Director

NORTHWESTERN'S WORLD-CLASS EXCELLENCE

- Northwestern start-up company NuMat is the leader in developing metal-organic frameworks at scale
- Northwestern leads $3.3M DOE effort using metal organic frameworks for direct air capture
- Northwestern leads $3.5M DOE Midwest Nuclear Direct Air Capture (MINDAC) Hub
- Northwestern leads the $1.7M NSF effort studying CO_2 capture materials in the presence of water