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## **Roles for materials physicists in carbon dioxide removal strategies**

*Tuesday 10 June 2025 14:45 (30 minutes)*

Even though large-scale carbon dioxide removal (CDR) technologies are not yet well-developed and bring a range of risks, they are also recognized as an integral part of any strategy to successfully limit global warming. In this context, I will provide a brief overview of several high-profile climate policy documents [1-3] that describe the current state of CDR technologies, and highlight specific identified challenges where materials physics could help advance CDR solutions. Following this, I will show examples from my own research program that aim to train physics students within multi-disciplinary collaborations that focus on linking fundamental science with the development of regionally appropriate CDR strategies.

[1] IPCC, Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, edited by H. Lee and J. Romero (IPCC, Geneva, Switzerland, 184 pp., 2023). DOI:10.59327/IPCC/AR6-9789291691647

[2] Washington Taylor, Brad Marston, Robert Rosner, and Jonathan Wurtele, PRX Energy 4, 017001 (2025). DOI: PRXEnergy.4.017001

[3] US Department of Energy Office of Science, Basic Energy Sciences Roundtable, Foundational Science for Carbon Dioxide Removal Technologies (Washington, D.C., USA, 4 pp., 2022). DOI: 10.2172/1868525

### **Keyword-1**

carbon capture

### **Keyword-2**

sustainability

### **Keyword-3**

carbon dioxide removal

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