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This collection is focused on industrial energy sustainability and CO₂ management, including processes that improve energy efficiency and reduce or eliminate industrial GHG emissions. Topics address technology areas such as clean energy technologies, innovative beneficiation, smelting technologies, process intensification, as well as CO₂ capture and conversion for industrial applications. Areas of interest include but are not limited to: Energy and materials-efficient minerals extraction and processing, including waste heat recovery, materials recycling, and other methodologies for low-cost energy materials production Advances in design and optimization of renewable and low-carbon energy harvesting technologies and energy carriers, including theory, new technology concepts, simulations and demonstrations relevant to decarbonizing materials extraction and processing Systems assessment for sustainable materials processing, including techno-economic, life cycle, circularity, technology scale-up, and regulatory impacts Low carbon technologies for advanced materials conversion, including carbon and other GHG reduction metallurgy in ferrous, nonferrous, and reactive metals capture and mineralization, carbon upgrade to chemicals, and use of low carbon fuel and feedstock Advances in materials for energy and carbon mitigation, such as infrared reflecting, endothermic and carbon absorbing materials for applications such as urban heat island mitigation and space cooling.