Analysis of technologies for CO2 capture from the air

The increase of CO2 concentration in the atmosphere urges the research community to find other solutions to solve this environmental problem, causing climate change and global warming. The removal of CO2 through the use of negative emission technologies could lead the global emission level to be net negative towards the end of the century. Among these negative emissions technologies, direct air capture (DAC), capturing CO2 directly from the atmosphere, could play an important and significant role. The captured CO2 can be removed in the long term with its storage as well as it can be used for chemical processes, allowing to have closed carbon cycles in the short term. For DAC, different technologies have been suggested in the literature and an overview of these is proposed. Absorption and adsorption are the most studied and mature but others are under investigation. An analysis of the main key performance indicators is also reported suggesting how more efforts should be done to develop DAC at a large scale by reducing costs and improving efficiency.

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