

Dealing with Global Warming

Dear Editor:

The last issue of *Interface* highlighted the problems of Global Warming and included an article on the possible use of cathodic reduction of carbon dioxide to limit emissions of this gas.

Data in the articles allow an estimate of the overall efficiency of such a technology; the inefficiencies of both power generation and cathodic CO₂ reduction combine to ensure that at least 5 kg of CO₂ are produced by a typical power station for every 1 kg of CO₂ removed in any conceivable electrolytic plant. Tryk and Fujishima address this problem briefly and conclude that the electric power for CO₂ removal needs to come from non-fossil fuel sources. This is not a logical proposal. For the same reason, the CO₂ balance is improved much more (and the cost of electrolytic plant for CO₂ reduction is avoided) by using the energy from non-fossil fuel generation directly to decrease the

number fossil fuel power plants. Indeed, in the limit, if all electric power came from non-fossil fuel, there would be little need for strategies to lower CO₂ emissions.

One could also note that the common product of cathodic CO₂ reduction is CO and, personally, I would prefer to continue to emit CO₂! The time has surely come to stop perpetuating the myth that electrochemical technology can contribute to a reduction of CO₂ emissions in this way.

Derek Pletcher
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Donald A. Tryk and Akira Fujishima
respond:

The main point that Professor Pletcher raises is that the effort to decrease the overall CO₂ output will be better served through the direct use of non-fossil fuel energy, rather than using it indirectly to

convert CO₂ back to a fuel, considering the inherent inefficiencies involved. However, let us make it clear that this is not an either-or choice. Of course, the development of non-fossil fuel energy is of supreme importance, and this is something that we should certainly have emphasized. The point is that CO₂ is going up smokestacks every day in every country in the world, and efforts should be made, electrochemically or not, to do something about it.

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