

AKE 3: Energie aus Biomasse

Zeit: Montag 15:15–16:00

Raum: ESA-A

Hauptvortrag AKE 3.1 Mo 15:15 ESA-A
Energy from Biomass Production - Photosynthesis of Microalgae? — •TILMAN LAMPARTER — Universität Karlsruhe, Botanisches Institut, Geb. 10.40, Kaiserstr. 2, D-76131 Karlsruhe

The composition of our atmosphere in the past, present and future is largely determined by photosynthetic activity. Other biological processes such as respiration consume oxygen and produce, like the use of the limited fossil fuel resources, CO₂ whose increasing atmospheric concentration is a major concern. There is thus a demand on the development of alternative energy sources that replace fossil fuel.

The use of crop plants for the production of biofuel is one step towards this direction. Since most often the same areas are used as for the production of food, the increased production of biofuel imposes sec-

ondary problems, however. In this context, the use of microalgae for biomass production has been proposed. Not only algae in the botanical sense (lower plants, photosynthetic eukaryotes) but also cyanobacteria, which belong to the prokaryotes, are used as "microalgae". The conversion of light energy into biomass can reach much higher efficiencies than in crop plants, in which a great portion of photosynthesis products is used to build up non-photosynthetic tissues such as roots or stems. Microalgae can grow in open ponds or bioreactors and can live on water of varying salinity. It has been proposed to grow microalgae in sea water on desert areas. Ongoing research projects aim at optimizing growth conditions in bioreactors, the recycling of CO₂ from flue gases (e.g. from coal-fired power plants), the production of hydrogen, ethanol or lipids, and the production of valuable other substances such as carotenoids.