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Sustainable production means rational entropy management

The ways of production and consuming of energy are in the focus of public debate since decades. Energy is a key issue for industry, agriculture, traffic and everyday life. But, the reason behind the requirement of energy is the need of entropy production and entropy release. This fact concerns the management of energy as well as all use and conversion of materials. Not only all industrial processes include chemical and biotechnical synthesis, but also all other human activities are connected with the production and the transfer of entropy. The improvement of global entropy management is the most general challenge for realizing a sustainable working and living society. The urgent challenge for using renewable sources and of coupling agriculture with all other production chains is due to the fact that the area-related income of sun power and surface emission of infrared radiation is the global entropy export path of earth. Recent technical developments and challenges for future technology will be discussed in the frame of sustainable entropy export mechanisms.



Figure 1: The global energy flow and the global entropy export system

Biography

J Michael Köhler is the Head of the Department of Physical Chemistry and Microreaction Technology at the Technical University of Ilmenau (Germany) since 2001. He studied Chemistry in Halle an der Saale and Jena, where he also habilitated in General and Physical Chemistry (1992). He led a research department at the Institute of High Technologies in Jena between 1991 and 2001. During this time, he also taught at the Universities of Wuppertal and Jena. He *inter alia* has edited books on Micro-lithography, Micro System Technology and Nanotechnology. His current research interests are focussed on nanotechnology, on application of droplet-based microfluidics in nanoparticle syntheses and bioscreenings and on physicochemical aspects of sustainable chemistry.

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