

Abstracts PdN-ChiS 2/59

Energy for the year 2050 – sustainable and CO₂-free energy supply for a stabilization of global climate

D. Meissner

The article is a great collection of numbers and pieces of information on regenerative energy sources. At the same time it is a playdoyer for solar technology for the future power supply.

PdN-ChiS 2/59, p. 6

Silicon photovoltaics – energy of the future

K. Lips, B. Rech

The article contains up-to-date numbers on silicon-based photovoltaic technology. It also refers to the latest technological progress of the last few years.

PdN-ChiS 2/59, p.10

World record solar cells and terrestrial application

B.E. Sagol, Th. Hannappel

The paper gives an overview on the development of highly efficient solar cells based on II/IV elements. The physical foundations, the problems concerning the production and the current state of research and technology are introduced in this firsthand account.

PdN-ChiS 2/59, p.15

How solar cells work

P. Würfel

The physical basics of the working principle of solar cells are explained using typical terms and equations from thermodynamics.

PdN-ChiS 2/59, p.19

Fluorescence concentrators – how to concentrate diffuse light

J.C. Goldschmidt, M. Peters

The set-up and working principle of fluorescence collectors are explained. Fluorescence collectors, which can also be experimentally and theoretically dealt with in the chemistry classroom in the context of macromolecules and fluorescing dyes, are interesting with respect to increasing the efficiency of solar cells under cloudy conditions.

PdN-ChiS 2/59, p.23

Dye sensitized solar cells - new concepts from nature

L.M. Peter

Going back to the natural process of photosynthesis, in this article the physical and chemical foundations of dye-sensitized solar cells are described. The author compares this kind of solar cell with silicon cells and sketches the latest developments and research in this field.

PdN-ChiS 2/59, p.25

Composites with nanochannels – As artificial light antennas

G. Calzaferri, A. Deaux, M. Tausch

Referring to natural light harvesting systems in photosynthesis, the structure, working principle and applications of artificial light antennas and converters made of zeolites and photoactive compounds are described.

PdN-ChiS 2/59, p.29

Plastic solar cells

J.C. Hummelen

The article contains basic information on a little-known type of solar cell, the plastic solar cell. The materials used for this cell differ greatly from those of other solar cells described in this issue of PdN-ChiS. But they are an appealing alternative for future developments of solar cell technology. For teaching chemistry they have a valuable didactic potential with respect to communicating basic concepts and obligatory contents for advanced classes.

PdN-ChiS 2/59, p.31

Competences and contexts

Materials and competences linked to the context solar cells in the chemistry classroom

C. Bohrmann-Linde

The article contains an overview on existing experiments, print and electronic media on the context solar cells in the chemistry classroom. It is also mentioned, which competences can be promoted when dealing with this context.

PdN-ChiS 2/59, p.35

Forum

The journalist method in the chemistry classroom – part II: *trans* fatty acids

J. Otten, R. Marks, I. Eilks

As part of a series examples of the journalist method in the chemistry classroom are described. This paper deals with the controversial debate on possible health risks connected with the consumption of products containing *trans* fatty acids.

PdN-ChiS 2/59, p.38

Production and test with bio gas in the chemistry classroom

K. Schwan, H. Strecker, A. Habekost

The use of bio gas and the development of bio gas plants are dealt with. Besides that, an experimental set-up, which can be easily realized at school and which is focused on the production and investigation of bio gas is introduced.

PdN-ChiS 2/59, p.40

Carbohydrates and their oxidation products – a crossword

H. Rössel

Knowledge of formulas and nomenclature are important instruments in chemistry, which have to be repeated time and again. The crossword is a chance to do this with respect to the most important organic classes using 25 formulas as examples. The crossword can be used for a repetition at the end of *Sekundarstufe I*.

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