

## Abstracts PdN-ChiS 7/57

### **Industrial production of vitamin C – in the past and today**

*W. Kuhn*

Starting from the *Reichstein* synthesis the concepts and the three finally realised syntheses of L-ascorbic acid are described. The author had been the production manager of the synthesis of vitamin C, which has not been continued at Merck KGaA since 2002.

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### **Vitamin C – a chemical chameleon**

*Chr. Ude, P. Heinzerling*

After a detailed description of the molecular structures easy-to-carry-out experiments with ascorbic acid in acid-base reactions, redox reactions and colour chemistry are described.

PdN-ChiS 7/57, p.16

### **Conserving vitamin C while handling food – an experimental approach**

*R. Heimann, K. Sperlich, J. Schmahl*

The properties of vitamin C, the factors influencing the amount of vitamin C in food and the consequences derived from these two aspects with regard to the handling of food containing vitamin C can be worked on with short texts and easy experiments.

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### **Vitamin C – influence of light, heat and other factors on the amount of vitamin C in food**

*J. Krieger, M. Ducci*

In the article the influence of light, oxygen and heat on the amount of vitamin C in lemon juice is described. As starting point for investigations at school an advertisement of the company *Tetra Pak* is proposed, in which it is mentioned that vitamins should be protected from light. Additionally the influence of heavy-metal ions on the oxidation of ascorbic acid to dehydroascorbic acid is considered.

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### **The iodine clock viewed differently – time reactions with ascorbic acid**

*P. Heinzerling*

The kinetic investigation of the *Hartcourt-Esson* reaction with school experiments is described. This oxidation yielding iodine via hydrogen peroxide is carried out in different variations as time reaction.

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## **Determination of the structure of citric acid – a teaching unit for *Sekundarstufe II***

*E. Irmer*

A teaching unit is proposed in which modern analytical methods such as mass spectrometry, NMR spectrometry and x-ray analysis of the common substance citric acid are combined with pupils' experiments.

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## **Competences and Contexts**

### **Vitamin C as important part of nutrition – supplemental exercises on three articles of this PdN edition**

*P. Heinzerling*

The editor of this PdN edition names competences which can be attained in connection with the context ascorbic acid.

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## **Forum**

### **On the importance of analogies in learning processes**

*V. Krämer, C.S. Reiners, E. Schumacher*

Referring to the theory of the different stages of cognitive development according to *Piaget* the general importance of analogies in learning processes is discussed and reflected using concrete examples.

PdN-ChiS 7/57, p.36

## **Salts – a concept on the introduction of ions**

*K. Wloka*

Ions as the building blocks of salts are an important species of particles in the chemistry classroom of the *Sekundarstufe I*. Their importance is unquestioned. The learning unit offers the opportunity to pupils to autonomously widen their particle model (undifferentiated atomic model) because it meets with experimental boundaries. Central to the unit are experiments guided by hypotheses.

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## **Getting Started – introducing bilingual chemistry in *Sekundarstufe I***

*C. Bohrmann-Linde*

In the article general remarks and concrete examples are given on how to start teaching bilingual chemistry in *Sekundarstufe I*. Additionally two worksheets for the initial stage are proposed.

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