

## 7.1.2 The Hyperscripts of AMAT - Overview

The following list of the Hyperscripts of AMAT gives some background information.

If you want to get an idea of what is covered in a Hyperscript, open it and then consult the "**Matrix**" (of modules) or "**Inhaltsmatrix**" that you find in the menu bar on the left.

### Hyperscript Defekte in Kristallen

"Defekte in Kristallen" was the first Hyperscript issued by **AMAT**. It was started early in **1997**, based on lecture notes written with **Word 6** at a time when conversion to **HTML** was not easy.

This Hyperscript was produced in loose cooperation with the "Erziehungswissenschaftliche Fakultät" of the CAU, now defunct (May **2000**); there was also some limited funding (about € 10.000.-) from the "Kultusministerium". It run under the heading "**VIN**"=Vorlesung im Netz meaning "lecture course in the Net". I fondly believe that it was the first scientific textbook that was issued as an "e-book" in modern lingo. It was not just a regular book that could be read on a screen but a real "Hyperscript" that took advantage of the possibilities inherent in the Internet.

Most noteworthy, however, was the work of **Wolfgang Lippik**, who, after finishing his Ph.D., not only converted the lecture notes into a functional Hyperscript, but taught his Professor **HTML**! May the power be with him!

This Hyperscript has been replaced by an English version and therefore is now **Closed**; it will not be updated anymore.

For historical reasons - here are three links to old documents in relation with "**VIN**" (all in *German*, sorry).

The [Goals](#)

The [Concept](#)

The [Status](#)

In the winter term of **99/00**, the Materials Science and Engineering Department of the Technical Faculty started a Masters Program - the immediate consequences were that "Defects" and most other courses would be taught in English from now on!

An English version was duly assembled (see below) - and this is now the *ultimate version*, replacing the old German script.

The German version was updated to the level of the English one in spring **2000** by **Kirstin Scholz**. It is usable, *but will no longer be maintained!*

### Hyperscript Defects in Crystals

This Hyperscript is the *English* version of "Defekte in Kristallen"; from **2000** onwards it is the valid Hyperscript to that topic.

The lecture course going with it was usually an elective in the Master program of Materials Science.

It contains a substantial number of modules not found in the German version.

Try, for example, the "advanced" part about "[damascene technique](#)" which will lead you into a highly interesting, but also wild and crazy adventure, which is only loosely coupled to "defects", but enjoys a growing popularity in the Net.

After my retirement in 2014 the course was not be given anymore. Nevertheless, the "Defects" Hyperscript is No. 2 in terms of popularity in Aug. 20236 with roughly 25.000 "clicks" per month

"Defects in Crystals" consists of **8** chapters with the following approximate **Module Count**

Basic	Backbone	Illustration	Exercise	Advanced	Total
24	54 +11=65	76	31	32	228

The 228 modules contain more than 500 pictures or graphics.

## Hyperscript Einführung in die Materialwissenschaft I (MaWi I)

The first of the Hyperscripts that was started right away as Hypercript, following a clear and powerful internal structure. In the "backbone" it contains a lot of prose like common undergraduate text books, but also many links to the basic and advanced part. In the "advanced" part it also aims at providing a spectrum of modules that reaches from barely relevant information (e.g. biographies of all major scientists mentioned) to silly and amusing parts, while not excluding some philosophical meandering.

- The we have plenty of illustrations in all modules but especially in the illustration part, and two kinds of exercises., Regular exercises (usually with the solution given) and multiple choice sheets.
- This Hyperscript is completely in *German* - an English version is presently not attempted.  
The lecture course is typically given in the 3rd semester of the Bachelor study course.
- After my retirement my friend Prof. Christine Selhuber-Unkel commenced teaching the course. She is teaching along the lines of the Hyerscript, keeping it alive and well.  
When she left for better and greener pastures in Heidelberg, her successor(s) still use this Hyperscript, as far as I know.

"Einführung in die Materialwissenschaft I" consists of **10** chapters with the following approximate **Module Count**

Basic	Backbone	Illustration	Exercise	Advanced	Total
25	102 +16=118	55	102	84	384

## Hyperscript "Einführung in die Materialwissenschaft II" (MaWi II)

The continuation of "Einführung in die Materialwissenschaft I", focussing on electronic properties of materials. Typicall

- "Einführung in die Materialwissenschaft II" contains far more math and equations than "**MaWi I**"; it covers the basics of semiconductors physics.  
The lecture course is typically given in the 4th semester of the Bachelor study course.
- This Hyperscript is almost completely in *German*, but on occasion amended with *English* modules.
- After my retirement my friend Prof. Christine Selhuber-Unkel commenced teaching the course. She is teaching along the lines of the Hyerscript, keeping it alive and well.  
When she left for better and greener pastures in Heidelberg, her successor(s) still use this Hyperscript, as far as I know.

"Einführung in die Materialwissenschaft II" consists of **6** chapters with the following approximate **Module Count**

Basic	Backbone	Illustration	Exercise	Advanced	Total
3	87 +3=90	24	71	27	215

## Hyperscript "Grundlagen der Materialwissenschaft für Elektro- und Informationstechniker"

(MaWi for ET&IT)

The Hyperscript "**MaWi for ET&IT**" was started in the Fall term of **08/09**; it is the first Hyperscript for the Electrical Engineering **Bachelor** study course. It is a one-term lecture course. Before that, the Electrical Engineering students were forced to make it through MaWi I and II as shown above.

- This lecture course is for **3rd** term students and in *German*.
- After my retirement the course was and is taught by changing lecturers who generally stick to the Hyperscript. however.

"**MaWi for ET&IT**" is supposed to cover most of what had been done in the three terms before, i.e. **MaWi I**, **MaWi II**, and **ELMAT** - to the extent possible. **MaWi for ET&IT** consists of of **10** chapters with the following approximate **Module Count**

Basic	Backbone	Illustration	Exercise	Advanced	Total
0	115	3	70	2	200

### Hyperscript "[Electronic Materials](#)" (ELMAT)

➤ The lecture course "Electronic Materials" has been terminated. around 2010 Instead, there will be now "**Advanced Materials B - Part I**" (**AdMat**); see below. The accompanying Hyperscript fwill have a lot in common with Elmat but will also contain new topics.

- The ELMAT Hyperscript will still be available but will not be upgraded any more. Nevertheless, it is still rather popular in the Net.
- The Hyperscript "Electronic Materials" was started in the Fall term of **99/00**; right away in *English*. In a way, it is a direct continuation of the two "Introduction to Materials Science" Hyperscripts from above, but it is also a "stand alone" Hyperscript on its own merits.
- "Electronic Materials" focuses on dielectric and magnetic properties, and has a large section about semiconductor materials and the technology of making microchips.

➤ "Electronic Materials" consists of **6** chapters with the following approximate **Module Count**

Basic	Backbone	Illustration	Exercise	Advanced	Total
8	69 + 9=78	48	27	34	195

### Hyperscript [Advanced Materials B, Part 1: Electronic Materials](#)

➤ The Hyperscript "**Advanced Materials B, Part 1**" was started in the summer term of **2011**. It covers the first part of "Advanced Materials B".

- This lecture course is for **2nd** term Mat- Sci. & Eng. students in the Mssters program

➤ "**Advanced Materials B, Part 1**" covers most of what had been done in "ELMAT" before. The major changes are

- Chapter 5 and 6 of ELMAT, dealing with **Si** and basic **Si** technology have been replaced by "**Optics**" and "**Special Materials**".
- After my retirement the course was taken over by Prof. Jeffrey McCord who changed structure and content to some extent. The Hpyerscript thus will no longer be updated.

**Advanced Materials B, Part 1** consists of of **5** chapters (a 6th one has never been finished) with the following approximate **Module Count**

Basic	Backbone	Illustration	Exercise	Advanced	Total
8	69 + 9=78	48	27	34	195

### Hyperscript "[Semiconductors](#)"

➤ This Hyperscript was started in the Fall term of **00/01**.

- "Semiconductors" was conceived as a two term course "Semiconductors I" and "Semiconductors II". For various reasons, "Semiconductors II" has not yet been fully implemented. The boundary between I and II is not rigidly defined; what we cover in the lecture course depends on the input of the students.
- Chapters 1 - 6 always will be covered to some extent in "Semiconductors I"; they are completely finished. Chapters beyond that belong to "Semiconductors II"; they are only partially finished.
- Two years before my retirement in 2014 I turned the course over to Dr. habil. Yogendra Kumar Mishra who works in the group of my successor and friend Prof Rainer Adelung. He is is teaching along the lines of the Hyerscript, keeping it alive and well.

➤ "Semiconductors" consists of of **11** chapters with the following approximate Module Count

Basic	Backbone	Illustration	Exercise	Advanced	Total
17	53 + 1=54	19	7	26	123

## "Hyperscript" [Semiconductor Technology and Nano Electronics](#) ' (Halbleitertechnik und Nanoelektronik)

The formerly independent lecture courses "*Semiconductor Technology*" (Prof. Föll), "*Material Science Seminar for Bachelors*" (Prof. Föll), and "*Nano Electronics*" (Prof. Adelung) were joined (by bureaucratic order) and now form the lecture module "*Semiconductor Technology and Nano Electronics*"

The contents haven't changed, however, and "**Semiconductor Technology and Nano Electronics**" is just the platform that contains the old Hyperscripts below. It is not a Hyperscript in itself.

## Hyperscript ["Semiconductor Technology"](#)

The Hyperscript "Semiconductor Technology" was started in the Fall term of **07/08**; it is the first Hyperscript for the Materials Science **Bachelor** study course. It is finished in all major parts.

The powers that are (including me) decided that the "Studiengang Materialwissenschaft mit dem Abschluss "Bachelor of Science" (Materials Science **Bachelor** study course) will have all its lectures in English for the **5th** and **6th** term.

My successor and friend Prof. Rainer Adelung is now teaching the course. He is teaching along the lines of the Hyperscript, keeping it alive and well.

"Semiconductor Technology" intends to cover the basics of the field. "It consists of of **9** chapters with the following approximate **Module Count**

Basic	Backbone	Illustration	Exercise	Advanced	Total
6	96 + 11=107	45	51	43	252

## Hyperscript ["Material Science Seminar for Bachelors"](#)

The Hyperscript "Material Science Seminar for Bachelors" was started in the Fall term of **07/08**; it is part of Materials Science **Bachelor** study course. It was (or still is) part of the "supermodule" "Semiconductor Technology and Nano Electronics"; see above.

The Hyperscript, however, will not be updated any more.

The powers that be decided that the "**Studiengang Materialwissenschaft mit dem Abschluss "Bachelor of Science"** (Materials Science **Bachelor** study course) will have all its lectures in English for the **5th** and **6th** term.

The core of a Seminar are the presentations of the students; a Hyperscript for a seminar thus might be seen as an oxymoron. However, a few useful modules are possible and provided (some go back to the abandoned seminar part of "Electronic Materials" and the abandoned Hyperscript "HTML".

The Hyperscript is short, it contains about **20 modules**.

## Hyperscript [Iron, Steel and Swords](#)

The Hyperscript "**Iron, Steel and Swords**" is not the Script to a lecture course but the result of my private hobby. It was started around **2012** and expanded beyond my wildest dreams into a monster Script. It is intended for the layman and thus has no equations in its "backbone" part. In contrast to the other Hyperscripts it has a "Science" column instead of a Backbone II, an "Articles" column instead of exercises and "Miscellaneous" instead of advanced.

The claim is that everything remotely connected to the history of iron and steel as exemplified by swords is covered in the script. Judge for yourself.

**Iron, Steel and Swords** consists of of **13** chapters with the following approximate **Module Count**

Basic	Backbone	Science	Illustrations	Articles	Miscellaneous	Total
29	129	97	87		130	475
There are also 15 "hidden" modules. Around 2900 pictures / graphics can be found.						

### Module Count

The total Module Count of the **10** active Hyperscripts is given in the table below.  
It does not contain the "HTML" and German "Defekte" scripts

Hyperscript	Basic	Backbone	Illustration	Exercise	Advanced	Total
<b>Matwiss I</b>	25	102 + 16=118	55	102	84	<b>384</b>
<b>Matwiss II</b>	3	87 + 3=90	24	71	27	<b>215</b>
<b>Defects</b>	24	54 + 11=65	76	31	32	<b>228</b>
<b>ELMAT</b>	8	69 + 9=78	48	27	34	<b>195</b>
<b>Semiconductors</b>	17	53 + 1=54	19	7	26	<b>123</b>
<b>Semi.-Technology</b>	6	96 + 11=107	45	51	43	<b>252</b>
<b>MaWi for ET&amp;IT</b>	0	115	3	70	2	<b>200</b>
<b>Mat.-Sci Seminar</b>	0	32	11	0	0	<b>43</b>
<b>Advanced Materials B,</b>	8	78	48	27	34	<b>195</b>
<b>Iron, Steel, Swords</b>	32	129	87	Science 97	Misc. 130	<b>412</b>
<b>Sum Total</b>	<b>123</b>	<b>866</b>	<b>416</b>	<b>483</b>	<b>412</b>	<b>2.300</b>

Who dunnit? (for non-mystery novel readers: Who did it?)

- Virtually all the content, including all drawings, were (and are) produced by me (Prof. H. Foell).
- Virtually all the more tricky stuff with respect to programming - the "Check" program, the Java and JavaScript stuff - was (and is) done by **Dr. J. Carstensen**.