

The History of the ELYMAT

- 1980** IBM /Yorktown Heights: H. Föll creates a remarkable mess and accidentally discovers [anodic etching](#) in p-Silicon. ([Appl. Phys. Lett. 1980](#); [J. Electrochem. Soc. 1980](#))
- 1981** Siemens/Mü-Perlach: H. Föll tries to introduce anodic etching into the Siemens solar Si project.
- 1982/83** Siemens/Mü-Perlach: V. Lehmann joins the crowd, first as a "Werkstudent" (student lab assistant). Basic electrochemistry of Si investigated, BPC - and "FPC" mode used and described.
- 10/82 - 3183** Siemens/Mü-Perlach and RWTH Aachen: [Diploma Thesis V. Lehmann](#): Characterization of Solar Si by Means of Electro- chemical Measurements Using an Electrolyte-Semiconductor Contact.
- 1983-85** Siemens Mü-Perlach and Hochschuldidaktisches Zentrum Aachen: H. Föll goes into microelectronics, V. Lehmann serve his time of "Ersatzdienst" (in lieu of the army draft).
- 6/85 - 8/88** Siemens/Mü-Perlach and Uni Erlangen: V. Lehmann does his PhD work in the labs of B.O. Kolbesen and H.Föll: Investigation of the Silicon Surface with Electrochemical Methods.
- 4/87** Siemens/Mü-Perlach: First ELYMAT patent application; Inventors H.Föll (50%) and V. Lehmann (50%). BPC mode (backside photocurrent) described. First [major publication](#) is written (No. **58**)
- 1988/89** Siemens/Mü-Perlach: Very brave decision (of B.O Kolbesen and to a smaller extent H. Föll) to construct and built two fully automated "marketable" ELYMATs. F. Gelsdorf and B. Göttinger (Kolbesen group) fully committed to construct prototypes. Big success, because they work right away.
- 12/88** GeMeTec company München: Owner P. Eichinger gets interested in the ELY MAT
- 12/88** Siemens/Mü-Perlach and Bayer AG Leverkusen: Cooperation agreement with Dr. Koch about ELYMAT use in multicrystalline Si technology
- 1/89** Siemens/Mü-Perlach: Second patent application, Inventors H. Föll (70%) and V. Lehmann (30%). L-mapping in FPC mode (front side photocurrent)
- 3/89** Siemens/Mü Perlach: Third patent application, Inventors H. Föll (50%) and V. Lehmann (50%). Surface recombination velocity S from difference in BPC T. Falter joins the Siemens crowd to learn the tricks and to assist in the technology transfer to GeMeTec
- 9/89** Siemens/Mü-Perlach: Fourth patent application, Inventors H. Föll (70%) and V. Lehmann (30%). Use of Electrolyte as ohmic contact for FPC and other ELYMAT modes
- 10/89** Siemens Mü / GeMeTec Mü: Formal licence agreement with P. Eichinger
- 12/89** ESSDERC Berlin: First presentation of ELYMAT to the scientific community (ECS Proc. 90-11) Publication **63**
- 10/91** CAU Kiel: H. Föll joins University of Kiel and resumes ELYMAT work via W. Lippik, his first Ph.D student
- 1991 - 1993** München/Kiel: P. Eichinger pays a lot of money in royalties to Siemens. H. Föll gets DM 1.370.-
- 1993 and beyond** In Kiel: ELYMAT adopted to (square) multi-crystalline Si for solar cell. Major improvements in theory (J. Carstensen) and some hardware issues