

Priv. Dozent Dr. Martin Kaltenbrunner
Career Accelerator Project *Soft Electronics Laboratory SEL*

Priv. Dozent Dr. Martin Kaltenbrunner never initially intended to pursue a career in research, "... the basic lecture by Prof. Bauer was actually the reason why I ended up in physics. The fact that I ended up becoming a researcher at his department was a stroke of luck for me."

As an undergraduate in the second year of his Bachelor's degree program, Prof. Kaltenbrunner was involved in a cover article presenting a new form of highly flexible, pressure-sensitive electronic skin in the "Applied Physics Letters". Kaltenbrunner demonstrated touch sensor applications, which included activating a switch using pressure and a microphone as thin as a sheet of paper. This initial work on pressure-sensitive sensor films was considered by the scientific community to be a milestone in the development of electronic skin that responds to stimuli.

Other groundbreaking developments followed, including organic solar cells only one hundredth of the thickness of a sheet of paper that can be applied to capacitor films. They are not only extremely light and flexible, but can also be stretched mechanically. Prof. Kaltenbrunner also developed the first stretchable battery and ultra-thin temperature sensor made of imperceptible plastic films.

Prof. Kaltenbrunner worked together with Professor Takao Someya at the University of Tokyo to develop an electronic sensor skin to be used in ultra-thin, light, large-area sensor fields and displays.

An ultra-flexible form of this kind of photonic sensor skin can also be used for mobile health applications. In collaboration with Professor Zhigang Suo at Harvard University, methods for the production of renewable energies from waves and other mechanical movements have been developed using thin elastomer membranes.

Many of Prof. Kaltenbrunner's research findings have been published in leading journals such as *Advanced Materials*, *Nature Communications* and *Science Advances*.

After his post-doctorate research stay at the University of Tokyo, Prof. Kaltenbrunner created the Soft Electronics Laboratory Group at the JKU's Department of Soft Matter Physics (Dept. Head Prof. Siegfried Bauer).

Prof. Kaltenbrunner is an editorial board member of the nature journal „*NPG Flexible Electronics*“, an advisory board member of the Winter School for Bioelectronics, and is responsible for organizing the MRS meetings for soft matter electronics.