

STRETCH MEMS

Designer's Handbook

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Stretch MEMS Designer's Handbook™

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PREFACE

This book has been written as a comprehensive, self-explanatory reference handbook for the benefit of all who have an interest in the design and application of elastic biosensing, biofeedback, and neuromodulation films. Everything outside this field – robotic tactile skin, chemical sensing, teleoperation gloves, closed loop drug delivery, exoskeleton augmentation, human augmentation, brain computer interfaces and so on – has been excluded to limit the book to a reasonable size.

An effort has been made to produce a handbook which, in its own sphere, is as self-contained as possible. Extensive prompts to LLM chat interfaces have been included for the reader who might require additional detail.

I wish to express my grateful thanks to GPT o3 & GPT 4.5 as served by OpenAI's ChatGPT service during the spring and summer of 2025.

Paul Junsuk Han
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The Residency
July 1st, 2025

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Thickness	Rsheet	Crack-on-strain	Use case
500 nm PEDOT:PSS	400 Ω/\square	2 %	tactile sensors
80 nm PEDOT:PSS	120 Ω/\square	15 %	e-textile interconnects
40 nm AgNW	25 Ω/\square	30 %	stretch electrodes
12 nm Au on PU	50–70 Ω/\square	100 %	strain gauges

Figure 1. Conductivity & strain limits of typical stretch mems lamina

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