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|  |  | הטכניון - מכון טכנולוגי לישראל  TECHNION - ISRAEL INSTITUTE OF TECHNOLOGY |
| הפקולטה להנדסה כימית  ע"ש וולפסון |  |  |
| The Wolfson Department of Chemical Engineering |  |  |

**Wolfson Department of Chemical Engineering Seminar**

**Wednesday, February 24th, 2021 at 13:30**

**Online seminar via Zoom**  
<https://technion.zoom.us/j/97591164072>

**Highly Stretchable Sensing Platforms for Future Electronic Skin**

**Yehu David Horev**

**PhD Seminar**

Advisor: Prof. Hossam Haick

Department of Chemical Engineering and the Russell Berrie Nanotechnology Institute,   
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In our day-to-day life, we monitor changes in temperature, strain, and pressures. Our skin does this, naturally; nevertheless, we use multiple measuring systems to allow us to monitor those parameters collectively.

By mimicking those attributes, one can achieve multi-sensing layers that provides almost all of the above functionalities. Herein, we used polyaniline (PANI), due to its advantageous properties, including low cost, easy-to-synthesis, biocompatible, and easy-to-functionalize material, to develop an advanced highly stretchable skin-like sensing and energy harvesting platforms.

Even though PANI, along with other intrinsic conductive polymers, has poor mechanical properties, grafting it onto a stretchable electrospun elastomer, or to a self-healing polymer, imparted high stretchability (up to 800% its original length) while preserving its electronic properties. Thus, allowing differentiating twisting and bending motions, transferring volatiles, temperature sensing, and provided a highly sensitive platform toward different stimuli. We also demonstrated the use of different non-volatile acids as dopants for tuning its functionalities. This platform is expected to be a great candidate for developing skin-like sensing technologies.