


Centre for  
Data Analytics








# Insight


## Textile Sensors and Smart Garments

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# Insight



- Combines 5 Centres of Excellence
- 8 Institutions
- 40+ Funded Investigators
- 200+ Researchers (PD, PhD)
- 40+ Collaboration Partners
- €88m Funding for 6 years

7/7/2015

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## My Background



PhD Biomedical Engineering, NUIM



Diploma in Fashion Design,  
Grafton Academy

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## My Research

Adaptive Sensors Group  
Multidisciplinary team led by Prof. Dermot Diamond

Development of new materials and sensors  
Applications in Healthcare and Environment



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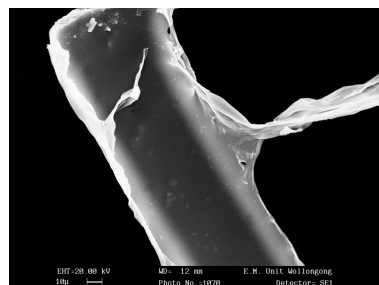
## Wearable sensors, electronic textiles



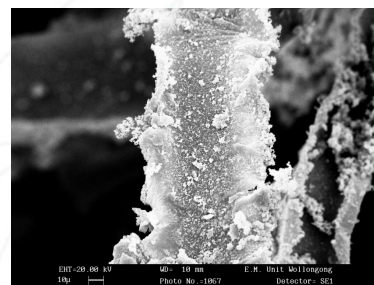
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## Fabric sensors

Modify fabric, textile itself becomes the sensor



Uncoated foam



Foam coated with conducting polymer

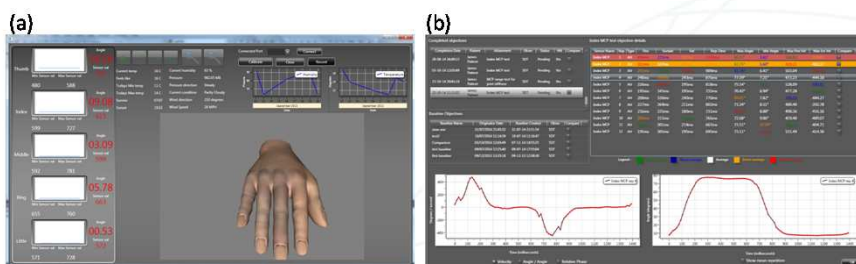
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## Fabric sensors



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## Fabric sensors



Fabric sensor glove

Collaboration with University of Ulster, James Connolly, Joan Condell  
Graphical user interface to monitor Rheumatoid Arthritis at home

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## Fabric sensors

Monitoring spinal flexion  
"Schober's test"  
Currently a tape measure is used



Monitoring breathing patterns



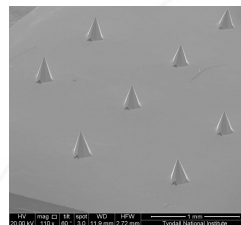
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## Wearable chemical sensors

Body fluids



Tears



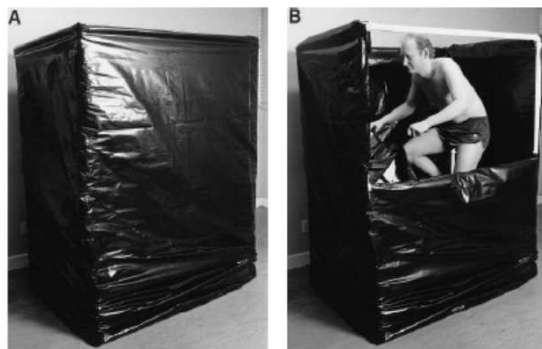
Interstitial fluid



Saliva

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## Sweat analysis



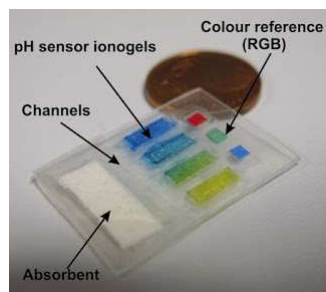
Wash-down technique

S. M. Shirreffs and R. J. Maughan, *J Appl Physiol* 82: 336-341, 1997

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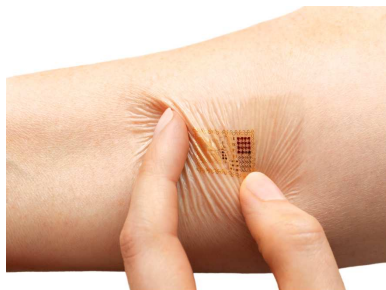
## Wearable sweat sensor

Wearable microfluidic patches



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## Future



mc10 biostamp