Portable Gage for Pressure Ulcer Detection (#4292)

A system and method for evaluating mechanical properties of materials

Georgia Tech inventors have created a system that involves a handheld instrument and method for evaluating the static and dynamic mechanical properties of deformable materials that are primarily tissues. The system is able to measure the application of force to a surface and has a dual-pinned flexion element, such as a piezoelectric material, with the goal to determine at least one mechanical property from the surface. The system has the potential to also involve a strain gauge (sensor) to detect deflection of the flexion element. With the current invention, the surface can either be a biological surface or a biological subsurface, including but not limited to membranes, tissues, and organs of a human, animal, plant, or other living organism.

Benefits/Advantages

- Compact/light weight
- Precise
- Inexpensive to manufacture
- Detects subtle changes in the bio-mechanical properties of skin

Potential Commercial Applications

- Pressure ulcers
- Deep tissue injuries
- Bruises

Background/Context for This Invention

Pressure ulcers are localized injuries to the skin or underlying tissue that are a result of pressure. They pose a critical problem as they result in severe discomfort and high healthcare costs. The prevention of pressure ulcers is a concern for nursing teams as ulcers often lead to mobility impairment and skin diseases have become some of the leading cause of morbidity, mortality, and disability worldwide. In particular, venous diseases (lipodermatosclerosis, lymphedema, and scleroderma) result in complex, non-healing, or recurring wounds accompanied by edema. These conditions lead to prolonged periods of disability and significantly harm quality of life. Early detection of chronic wounds and pressure ulcers is difficult and there is a need for a system to objectively measure the changes in the properties of the skin and the underlying tissue.

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Publications

For more information about this technology, please visit:
https://licensing.research.gatech.edu/technology/portable-gage-pressure-ulcer-detection