

Aims to improve and enrich human life

Clothing Research at Japan Women's University

Professor Yoshiko Taya does research work on clothing at Japan Women's University. Her aim is to find out what kind of clothes are comfortable to wear in different environments. In her tests, she has used a special version of Vaisala's HMP36 humidity and temperature probe for almost ten years.

Japan Women's University, founded in Tokyo in 1901, is the first general university for women in Japan. Professor Yoshiko Taya does research on clothing in the home economics department.

Optimum clothing for all environments

"The purpose of my research is to find out what is comfortable to wear in different environments. It includes studying functionality, design and how people feel when wearing clothes in these environments. Our research is focused on everyday clothes, but I hope that in the future we can also recommend the most suitable kinds of clothes for special places such as hospitals," Dr. Taya explains.

To find out what happens in the human body in different environments, measurements are taken of perspiration, skin temperature, body temperature, blood flux, heart rate, brain waves and body movement. Dr. Taya has been using a version of Vaisala's HMP36 humidity and temperature probe for almost ten years in her measurements of human perspiration.

Professor Taya with her research team in the experiment room. From the left: Minako Sato, Prof. Yoshiko Taya, Yuko Mitani, Tamae Miura and Mariko Sato.

Human skin moisture measurements

"Fast response times, reliability, repeatability and small size are important in measuring perspiration. Furthermore, it must be possible to isolate the probe from the surrounding environment in order to get accurate results," says Dr. Taya. For this purpose she has designed a glass chamber, or capsule, in which two humidity sensors and thermistors are installed. Nitrogen gas is run from one end of the capsule to the first sensor to get a reference value, then through the point that is attached to the skin, to the second sensor that measures the moisture evaporated from the skin, and finally outside the capsule. The perspiration is calculated from the difference between the readings of the two sensors, the nitrogen (N₂) gas flux and the size of the skin area that is being measured. The data is stored in a computer at four-second intervals.



By analyzing the data, it is possible to distinguish different types of perspiration: perspiration caused by a warm environment, perspiration caused by nervousness and non-sensible perspiration, which happens all the time.

A test is run twice a day for three weeks in a special climate chamber, in which the conditions are controlled. The test is repeated several times a year,

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because the season influences the human perspiration results, even if the experiment conditions are exactly the same. As Dr. Taya explains, it is quite difficult to do research on human perspiration, clothes and the environment. "A human body is a complex system and that is one reason why the measurement results are never the same," she points out.



Measuring insensible perspiration in the experiment room at Japan Women's University.

Vaisala's good service counts

Dr. Taya chose Vaisala's products because they best met her special measurement needs. Another reason was Vaisala's good brand image. "And I've always got good service when consulting Vaisala's salesmen in measurement questions."

"I want my research to contribute to improving and enriching human life," concludes Dr. Taya. ■