# A Saliva Collection Device for the Diagnosis of Sleep Disorders

## TECHNOLOGY NUMBER: 7306

## OVERVIEW

A device that collects saliva from patients to measure melatonin and diagnose sleep disorders

- An oral retainer that resembles a teeth whitening and which collects samples every hour
- Inexpensive and wearable medical device with a unique storage mechanism for inexpensive testing

## BACKGROUND

The National Institutes of Health estimates that 50 to 70 million people in the United States suffer from chronic sleep disorders and obstructive sleep apnea (OSA). Sleep disorders are associated with a number of serious health risks, including heart disease, high blood pressure, and diabetes. Due to a lack of awareness as well as costly and unpleasant testing procedures, the majority of sleep problems remain undiagnosed and untreated. An inexpensive way to diagnose sleep disorder is to monitor the salivary levels of melatonin, a naturally occurring hormone whose levels rise prior to sleep onset. Given difficulties measuring these melatonin levels in a simple and inexpensive manner, a need exists for improved mechanisms to accomplish this feat.

## INNOVATION

Researchers at the University of Michigan have developed a device that enables melatonin monitoring, called the Saliva Micro-Array Retainer (SmR) device. The invention is comprised of a MEMS array (Micro-Electro-Mechanical Systems) of micro-reservoirs. These reservoirs are three dimensionally (3D) printed, custom-made, and resemble a teeth-whitening retainer. The SmR is a placed in a patient's mouth for 24 hours and collects saliva samples every hour. The retainer is then removed, and the saliva samples are analyzed using standard laboratory protocols and equipment. A novel and proprietary technique ensures that the saliva is collected into the reservoirs at specific time points and that the samples are securely sealed until they are ready to be analyzed.

## PATENT APPLICATION

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### Category

Medical Devices
Life Sciences

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