

Abstract Submitted
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Miniature Wireless BioSensor for Remote Endoscopic Monitoring ALEX NEMIROSKI, KEITH BROWN, DAVID ISSADORE, ROBERT WESTERVELT, Harvard University School of Engineering and Applied Science, CHRIS THOMPSON, KEITH OBSTEIN, Harvard University Medical School, MICHAEL LAINE, Soltegit, LLC. — We have built a miniature wireless biosensor with fluorescence detection capability that explores the miniaturization limit for a self-powered sensor device assembled from the latest off-the-shelf technology. The device is intended as a remote medical sensor to be inserted endoscopically and remain in a patient's gastrointestinal tract for a period of weeks, recording and transmitting data as necessary. A sensing network may be formed by using multiple such devices within the patient, routing information to an external receiver that communicates through existing mobilephone networks to relay data remotely. By using a monolithic IC chip with integrated processor, memory, and 2.4 GHz radio, combined with a photonic sensor and miniature battery, we have developed a fully functional computing device in a form factor compliant with insertion through the narrowest endoscopic channels (less than 3mm x 3mm x 20mm). We envision similar devices with various types of sensors to be used in many different areas of the human body.

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