THE POWER BARRIER
PAGE 439 Driven by spectroscopy and gas sensing applications, considerable effort has been devoted to the development of short wavelength mid-infrared lasers. At room temperature, however, the milliwatt power of these lasers has been too low for practical applications. By exploiting AlAs barriers in the active region, researchers from Sheffield University in the UK have demonstrated a room temperature quantum cascade laser operating at over 1 watt.

A FAMILIAR STEP
PAGE 412 In comparison with other biometrics, gait pattern recognition has the advantages of being unobtrusive and effective at a distance. The dynamic texture model is an effective method for pattern recognition, and researchers from Xidian University, China, have overcome the difficulties in applying the model to nonlinear processes to develop a new and effective gait recognition technique.

GOOD VIBRATIONS
PAGE 420 Cryogenic Sapphire Oscillators (CSOs) present unbeatable frequency stability at short time integration which gives them application in fields from fundamental physics (searching for variations in fundamental constants) to deep space navigation. Researchers in France working with 10 GHz CSOs produced for the European Space Agency’s (ESA) Deep Space Network (DSN) have measured for the first time the phase noise of a state-of-the-art CSO cooled by a cryocooler, avoiding the use of liquid helium.

CONCENTRATED BANDWIDTH
PAGE 391 Researchers in China have produced a wideband circularly polarised stacked folded patch antenna which is 81.5% smaller than a conventional half-wave patch antenna. Due to their low profile and low weight, circularly polarised patch antennas are commonly used in mobile satellite communications. Previous techniques to increase their bandwidth have tended to compromise their size advantages, however, the antenna produced in this work is both compact and displays a good axial ratio bandwidth.

MICRONAVIGATION
PAGE 406 Microelectromechanical system (MEMS) inertial devices have been used in many low and medium accuracy applications such as automotive safety systems. However, commercial devices have thus far lacked the accuracy necessary for navigation applications. But now researchers in China have produced a Single Neuron Proportional Integral Controller for a micromachined electrostatically suspended gyroscope (MESG) which gives the MEMS device potentially navigation-grade precision.

AAlAs barriers reduce inter- face scattering and boost power to over 1 watt.

A sapphire resonator produced to form the frozen heart of an ESA DSN ground station.

A new controller may open the door for MEMS gyro- scopes with navigation-grade accuracy.