

**An integration challenge: Information and communication technologies
to address indoor air quality in commercial buildings**

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As part of an NRC-wide initiative to better serve the industry in the area of information and communication technologies (ICT), an arrayed sensor platform is under development to measure a number of variables that affect not only the comfort of tenants in commercial buildings, such as temperature and relative humidity, but also their health (formaldehyde and other volatile organic compounds). The demonstration system will be deployed in an office environment where the measurements taken by the sensor arrays will be reported via a wireless network to a decision-aided system which will relay remedial actions to the lighting and heat, ventilation and air conditioning systems. The scientific challenge lies mostly in the development of new sensing paradigms to detect concentrations of formaldehyde at the 50 microgram per cm³ (parts per billion) concentrations. While this project is driven by impending revisions of the tolerance levels for formaldehydes in Canada, it will allow the integration of expertise in microelectronics, photonics, data mining and wireless technologies into a single platform that could be of interest to environments other than that of normal commercial buildings – in particular, hospitals, civil infrastructure, transportation to name but a few. A review of the state-of-the-art in this field will be given.