

## Recent developments in photonic crystal fibres (PCFs)

P. St.J. Russell

Max-Planck Research Group, University of Erlangen-Nuremberg  
91058 Erlangen, Germany: [www.pcfibre.com](http://www.pcfibre.com)

PCFs [1] have been used to realise highly efficient and stable gas-laser cells for stimulated Raman scattering in hydrogen and electromagnetically induced transparency in acetylene. The demonstration of hermetically sealed in-line versions of these devices, spliced to standard single-mode fibre pigtails, may lead to the incorporation of such devices in commercial products [2].

The cladding structure in air-glass PCF, appropriately designed, has been shown to support phononic band gaps. This results in high acoustic energy densities in a central core, which can act as a high Q resonator for sound. The resulting trapped vibration acts like an artificial “molecule”, causing Raman-like scattering of light [3].

Recently all-solid versions of PCF have appeared [4]. Made from two different glasses, photonic band gaps appear even at very low index contrasts. Precise wavelength filtering can be achieved by judicious design of the cladding unit cells.

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[2] F. Benabid et al., *Nature* **434**, 488 (2005).

[3] P. Dainese et al., *Opt. Exp.* **14**, 4141 (2006).

[4] A. Wang et al., *Opt. Exp.* **14**, 10844 (2006).