



Decontamination of Surgical Instruments with MIDAS

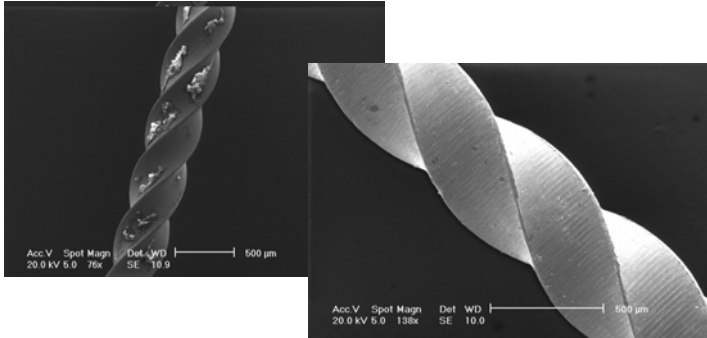


Image: Electron micrographs of an orthodontic file after normal sterilisation (left), and after treatment with the MIDAS plasma process (right).

The University of Edinburgh has developed new methods for cleaning surgical instruments, which completely remove protein contamination, including prions - the infectious agents that cause Creutzfeldt-Jakob Disease (CJD) in humans. The methods, known collectively as MIDAS, use radiofrequency (RF) gas-plasma technology and are highly effective in removing contamination, including protein, from a variety of surfaces. Biological assays using infective implants have verified that the technique eliminates TSE infectivity.

Prion diseases, including BSE (mad cow), Scrapie and CJD, are exceptionally resistant to inactivation by conventional chemical and physical decontamination procedures. This creates a risk of cross-contamination from instruments used during surgical procedures on patients with diagnosed or undiagnosed CJD. Conventional sterilisation alone does not deactivate the infective agent of prion diseases. Many instruments must, therefore, be removed entirely from service.

MIDAS technologies involve a series of pre-treatments, followed by exposure of the surgical instruments to RF plasma. The plasma treatment effectively scours the surfaces, breaking down any biological tissue and converting it to non-toxic gases. Test samples pre-contaminated with TSE infective brain tissue and then treated using the MIDAS method show that contamination has been eliminated.

The new technique can remove contaminating biomolecules from stainless steel surfaces (to levels a thousand times lower than those achieved by existing methods) and leaves no visible trace of any residual contaminated material. Verification techniques include SEM, spectrofluorimetric detection and biological TSE infectivity testing conducted by an independent laboratory.

Key Benefits

- Removal of all protein contamination, including prions
- Reduced risk of iatrogenic infection
- Surgical instruments can be re-used
- Stock-piled instruments can be brought back into service
- Metal instruments are not damaged by the plasma techniques

Applications

- Healthcare
- Surgery
- Dentistry
- Sterilisation
- Veterinary surgery
- Food preparation

Patent Status

A patent has been filed on this technology (Ref No. UK 0501460.0), entitled "Improved plasma cleaning method".

Commercial Opportunity

The University of Edinburgh is seeking a suitable commercial partner to license this technology for use in the healthcare industry.

Further Information

For further information on this technology transfer opportunity with the University of Edinburgh, please contact:

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