

# Forensic science unravels a 90 year mystery

**Fibre analysis testing by an AFP forensic scientist has provided the Australian Defence Force (ADF) with critical information about one Australian soldier nearly 90 years after he had served his country in World War 1 (WW1).**

In September 2006, the remains of five Australian soldiers were found near the small town of Westhoek in Belgium. Following extensive research collaboration between Australian and Belgian authorities, the remains of two of the missing WW1 soldiers were identified and the AFP's Forensic and Technical was asked to play a small but crucial role in the Australian Army's investigation.

Dr Jane Hemmings of Forensic and Technical said that the Australian Army approached the AFP in October 2007 for specialist forensic advice and to further examine colour patches from recovered uniforms.

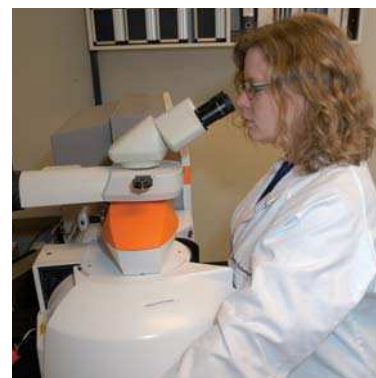
"Initially, none of the bodies could be identified by their official identification cards or badges," Dr Hemmings said. "One of the soldier's remains had the remnant of a colour patch used to indicate which battalion he came from."

Initial examinations of the patch were carried out by the National Institute voor Criminalistiek and the Universit  de Li ge in Belgium. Unfortunately, the Belgium examiners were unable to access the Australian War Memorial (AWM) samples and the AFP was asked to compare the AWM samples with the war grave samples.

"As I had completed my PhD in the use of Raman spectroscopy for forensic fibre examinations and had the expertise to



Photo courtesy of the Australian Army



Left: Portions of the recovered uniforms showing the colour patch examined by Dr Jane Hemmings. Right: Dr Hemmings using the Raman spectroscopy instrument.

examine the colour patches I was able to combine these skills and test the patches in our facilities in Canberra." Dr Hemmings said.

While Raman spectroscopy has been around since the early 1920s and used in many industries such as archaeology, art restoration and preservation and gemology, the use of this sensitive analytical technique over the last decade has become more accessible in forensic science. The Chemical Criminalistics team uses this technique to assist AFP investigations, for example in the analysis of paint, fibre, pigments, suspect white powders and explosives.

"Up until a few years ago the instrument was prohibitive to purchase, but we are fortunate to have one in the facility," Dr Hemming said. "Along with this advanced technology, we had the capability to examine this particular remnant."

Dr Hemming said that the presence of dye residue after all this time and that it was measurable with the available technique meant that she could provide timely advice for the Army.

"Using historical information combined

with the analytical findings resulted in an understanding of the original colour of the patch from what was essentially an exceptionally small number of coloured fibres in a heavily degraded sample," Dr Hemmings said.

While the Australian War Memorial had no patches matching the sample fabric, an analysis of historical documents showed the soldier would have come from the 49th or 50th Battalion Command.

The two identified soldiers were Sergeant George Calder of the 51st Battalion and Private John Hunter of the 49th Battalion. Families of the two men joined Governor-General Michael Jeffery at a ceremony where the remains of all five men were reinterred in the Buttes Military Cemetery in Zonnebeke on 4 October 2007.

The Minister Assisting the Minister for Defence, Mr Bruce Billson, said he was pleased that the Army had been able to identify two of the soldiers through the research process. In a media statement on 4 September, Mr Billson said: "...by engaging the scientists we were able to establish a physical link between the list of names and the remains."