

# Going to waste? opening a new conversation with historical dirt

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Black soilings on historical textiles often release black particulates when cleaned by standard mechanical and chemical conservation methods. These have long been speculated as soot from coal fires and associated with detrimental acidic pollution products<sup>1</sup>.

- How much of a chemical threat are 'sooty' soilings to historical textiles?
- Is there any evidential value in such soilings for the conservator, curator or environmental scientist?

These questions have led to a new research collaboration called 'Dirty Stories' between textile conservators and conservation scientists at the CTCTAH and chemical scientists specialising in the microanalysis of complex chemical mixtures at the University of Aberdeen. A range of chromatographic and spectroscopic analytical methods will be evaluated for characterising 'sooty' soilings on historical textiles.

An essential and significant part of 'Dirty Stories' is the framing of a meaningful analytical approach through the evaluation of analytical methods -simple and complex - from the textile conservator's perspective. This is being undertaken as a four month dissertation project by Masters student Nora Meller, beginning in late April 2013.

## The conversation opener

Questions raised in treatment decision discussions between conservators and the curator for a 19<sup>th</sup> C garment recently conserved at the CTCTAH made us realise that we know little about the true chemical nature of such soilings and their provenance.



Patches of black 'sooty' soiling were evident on a rare mid 19<sup>th</sup> C academic gown from the collection of the Hunterian Museum, University of Glasgow (accession no. C.1986.49).<sup>2</sup> Acidic pH measurements and shedding fibres indicated active degradation of the textile.



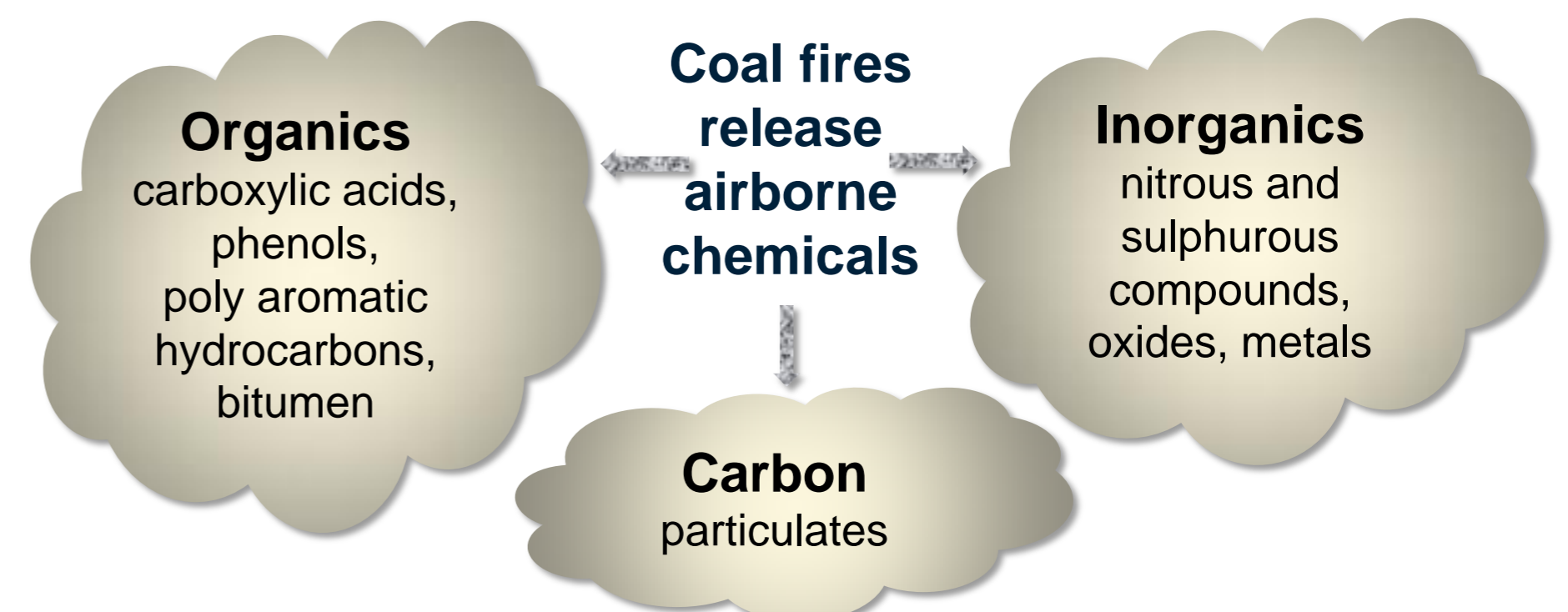
Following extensive discussion weighing up the historical value of the soiling against it being a major factor in the degradation of the fabric, removal was agreed.

After mechanical cleaning with a low-suction vacuum, the gown was treated with aqueous non-ionic surfactant Dehypon LS45 and the additive sodium carboxymethylcellulose for soil suspension.



Fine black particles were observed in the rinse water. Was this historical evidence of polluted industrial and domestic environments literally going to waste?

## Getting the conversation flowing

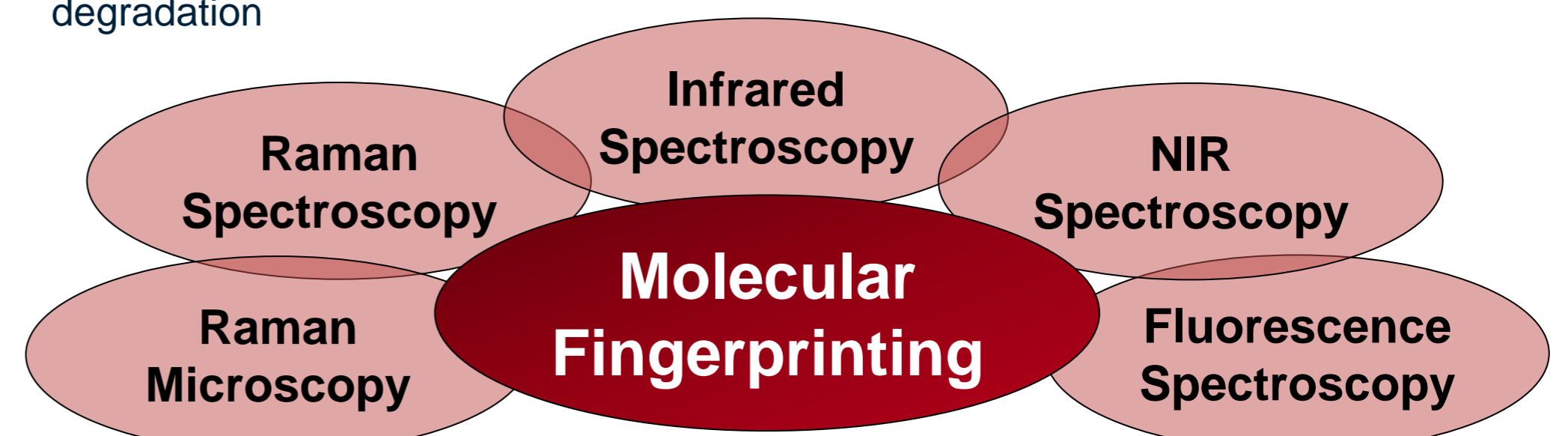


Carbon is inert but has a non-polar high surface area. It readily attracts volatile chemicals. Environmental scientists can identify the fuel source of fires by analysing chemicals trapped in airborne soot<sup>3</sup>.

**'Sooty' soiling on historical textiles may be a concentrated source of degradative inorganic and organic compounds<sup>4</sup> as well as a time capsule of past environmental information**

The 'Dirty Stories' project involves the chemical analysis of black soilings and dirt on domestic interior historical textiles removed by mechanical and wet cleaning:

- Chemical profiling of soilings released by dry and wet cleaning treatments
- Evaluation of appropriate (in-situ) analytical techniques for conservation assessment
- Assessment whether 'sooty' soilings are chemically active or passive in textile degradation



### References

1. Tímár Balázy, Á and D. Eastop. *Chemical principles of textile conservation*. Butterworth-Heinemann, Oxford: 1998.157 - 174
2. Coupar, S-A, J. Brenner and K. Thompson. *Transactions of the Burgon Society* (submitted)
3. Simoneit, B.R.T. *Applied Geochemistry* 17 (2002). 129 - 162
4. PAS 198:2012. *Specification for managing environmental conditions for cultural collections*