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54 **Apparatus and method for transient thermal infrared spectrometry of flowable enclosed materials.**

57 A method and apparatus for enabling analysis of a flowable material enclosed in a transport system having an infrared transparent wall portion. A temperature differential is transiently generated between a thin surface layer portion of the material and a lower or deeper portion of the material sufficient to alter the thermal infrared emission spectrum of the material from the black-body thermal infrared emission spectrum of the material, and the altered thermal infrared emission spectrum is detected through the infrared transparent portion of the transport system while the altered thermal infrared emission spectrum is sufficiently free of self-absorption by the material of emitted infrared radiation. The detection is effected prior to the temperature differential propagating into the lower or deeper portion of the material to an extent such that the altered thermal infrared emission spectrum is no longer sufficiently free of self-absorption by the material of emitted infrared radiation. By such detection, the detected altered thermal infrared emission spectrum is indicative of characteristics relating to molecular composition of the material.

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	WO-A-9 008 311 (IOWA STATE UNIVERSITY RESEARCH FOUNDATION) * page 6, line 13 - page 7, line 11 * * abstract; figure 1 * ---	1,2,4-6, 12,13	G01N21/71 G01N25/72 G01N21/85 G01J5/00
Y	US-A-3 773 424 (SELGIN) * column 2, line 60 - column 4, line 5; figure 1 *	1-6,12, 13	
A	---	8,10	
P,Y	EP-A-0 465 082 (IOWA STATE UNIVERSITY RESEARCH FOUNDATION) * column 9, line 40 - column 10, line 38 * * abstract; figure 1 * ---	1-5,12, 13	
A	WO-A-8 700 632 (KANOR) * page 11, paragraph 2 * * page 28, paragraph 2; figure 4 * ---	1-4,6, 12,13	
A	ANALYTICAL CHEMISTRY vol. 62, no. 19, 1 October 1990, COLUMBUS US pages 2074 - 2079 JONES ET AL. 'QUANTITATIVE ANALYSIS OF SOLIDS IN MOTION BY TRANSIENT INFRARED EMISSION SPECTROSCOPY USING HOT-GAS JET EXCITATION' * page 2074, right column, paragraph 2 - page 2075, right column, paragraph 1 * * abstract * ---	1,2,4, 12,13	TECHNICAL FIELDS SEARCHED (Int. Cl.5) G01N
A	EP-A-0 250 070 (BRAN+LUEBBE TECHNICON INDUSTRIAL SYSTEMS) * page 1, line 5 - line 11 * -----	7	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 24 MARCH 1993	Examiner KRAMETZ E.M.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	