BARIUM AFFIRMED BY SPECTROSCOPY

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The unusual presence of the element barium in the atmosphere now appears to have been affirmed through the methods of spectroscopy. Spectroscopy is "the study of the absorption and emission of light and other radiation by matter, as related to the dependence of these processes on the wavelength of the radiation" (Enc. Brittanica). The results of the current research are now sufficient to establish an analytical basis for the formal investigation of radical atmospheric changes induced by relatively recent aircraft aerosol operations. This work further confirms the recent findings that have substantiated the unusual presence of an alkaline salt form in the atmosphere, as revealed through recent pH tests conducted across the country. Barium compounds, especially those of a soluble nature, are regarded as a serious health risk, and they are commonly associated with respiratory distress.

Research by this method will continue, but preliminary results are provided because of the importance of the findings and to support the claims that are made herein. It is recommended that other researchers across the country participate within this endeavor, in an effort to further refine the results of the study. Spectroscopy provides an analytic tool that can be used to establish the presence or absence of certain foreign elements in the atmosphere that have been under consideration for some time.

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ADDITIONAL SPECIFIC INFORMATION:

More details on the methods and tools that have been used in this study will be presented as time and circumstances permit. Two significant identifying spectral lines appearing are those at 712nm and 728nm respectively; these lines are visible only under very restricted conditions near sundown. Lines in association with barium at 455, 491, 516, 554, 614 and 648nm are also under due consideration. The elements of C, Ca, Fe, H, Mg, N, Na, and O have been considered for comparison with these critical lines, and the presence of barium appears to stand unique in this portion of the spectrum at this intensity. Results of the study presented on this page are subject to revision based upon continued findings or if any errors are determined. The table below remains incomplete as this study remains in progress. One visual light prism spectroscope and one visual light diffraction-grating spectrometer are being used within the study, and the results from each are cross-checked with each other. The visible light spectrum ranges from approximately 400 to 700 nanometers(nm), with violet at the 400nm range and red at the 700nm range. The expected error in any reading is approximately 1-3 nanometers, which is sufficient in most cases to eliminate ambiguity. Those with further information to supplement the table are welcome to contribute to the completion of it. The specific absorption lines in the instruments which have been observed thus far are:

Observed Wavelength (nm)	Associated Element(s)	ActualWavelength: (nm)	Relative Intensity	NIST Intensity	Comments or Source
428	Fe, Ca, C, Cr	427	1		C,Cr : Emsley : The Elements
436	H	434	3		Emsley : The

[illegible]	[illegible]	[illegible]	[illegible]		Elements
452	?				
455	Ba	455	2		Emsley : The Elements
474	?		2		
484	H	486	1		Harvard-Smithsonian
491	Ba	493			Emsley : The Elements
516	Ba, Mg, Fe	Ba 516 Mg 518 Fe 518	2		Ba : NIST Fe: Harvard Smithsonian Mg : Emsley : The Elements
526	Fe	527			Harvard-Smithsonian
533	I?	534			Emsley : The Elements
538	C	538			NIST
549	S	551			Emsley : The Elements
554	Ba	554	3		Emsley : The Elements
559	S?	561	3		Emsley : The Elements

572	?		3		
589	Na, He	Na 589 He 588	1		Emsley : The Elements
602	?				
616	Ba	614			Emsley : The Elements
627	O	628			Columbus Optical SETI Laboratory
648	Ba	650			Emsley : The Elements
656	H	656	1		Emsley : The Elements
686	O	687	1		Harvard-Smithsonian
715+/-3nm	Ba	712	1	2400	NIST Visible only at conditions of sunset or sunrise
725+/33nm	C	724			Emsley : The Elements Visible only at conditions of sunset or sunrise

725+/-3nm	Ba	728	1	3000	NIST Visible only at conditions of sunset or sunrise
760+/-3nm	O	760	1		Columbus Optical SETI Laboratory Visible only at conditions of sunset or sunrise

Additional Notes:

ELEMENTS UNDER CONSIDERATION:
Source : Emsley : The Elements

Abundance within the Sun (relative to hydrogen, the most abundant at 1×10^{12}):	Expected Atmospheric Concentration (ppm)	Main Spectral Lines (400-750nm)
Hydrogen : 1×10^{12}	**0.5 (volume)**	**434,486,656**
Helium : 6.3×10^{10}	**5.2**	**588**
Oxygen : 6.9×10^{8}	**209500**	**None listed**

Carbon : 4.2 x 10^8	350(volume) (CO2)	427,724
Silicon : 4.5 x 10^7	None	504,506,567,635,637
Nitrogen : 4.0 x 10^7	780900	463,500,568,747
Magnesium : 4.0 x 10^7	None	518
Iron : 3.2 x 10^7	None	None listed
Sulfur : 1.6 x 10^7	None	545,547,551,562,566
Aluminum : 3.3 x 10^6	None	None listed
Calcium : 2.2 x 10^6	None	423
Nickel : 1.9 x 10^6	None	None
Sodium : 1.9 x 10^6	None	590
Argon : 1.0 x 10^6	9300	696,706,750
Barium : 123	None	455,493,554,614,650,706

Relative intensity within the upper table is an arbitrary ranking factor, with 1 indicating a more intense absorption line in the spectrum, and 3 being the weakest. NIST intensity is the relative intensity assigned by The National Institute of Standards and Technology Physics Library Atomic Spectral database.

Barium Toxicity Profile

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