

19. The apparatus of claim 18 including means interposed in said path between said targets and said sensing means for dispersing energy.

20. The apparatus of claim 18 wherein said path includes a mirror, and means for effecting relative motion between said mirror and targets to sequentially reflect along said path energy received by the mirror from respective ones of said targets.

21. The apparatus of claim 20 wherein said path includes means interposed between said mirror and sensing means for illuminating said sensing means with a spectrum of energy reflected from said mirror along said path.

22. The apparatus of claim 21 wherein said sensing means comprises an energy-sensitive surface for receiving the spectra of energy reflected from said targets, and means for generating electrical signals indicative of intensity of energy received at different points on said surface.

23. The apparatus of claim 22 wherein said means for differentially combining signals comprises means for storing a set of noise signals indicative of intensity of energy received from said black body at a number of points on said surface, means for generating a set of first target signals indicative of intensity of energy received from said first target at said points on said surface, means for generating a set of second target signals indicative of intensity of energy received from said second target at said points on said surface, and means for subtracting said noise signals from said first target signals and from said second target signals.

24. The apparatus of claim 23 including means for generating a set of reflectance signals indicative of the ratios of (a) the differences between said first target signals and said noise signals at said points, and (b) the differences between said second target signals and said noise signals at said points.

25. Measuring apparatus comprising

a diffusing cavity having an exit port and first and second target ports,

means for mounting a first target to said cavity at said first target port for illumination by energy reflected within said cavity,

means for mounting a second target to said cavity at said second target port for illumination by energy reflected within said cavity,

a radiant energy source for illuminating the interior of said cavity with radiant energy, and

a mirror mounted within said cavity for reflecting through said exit port energy from said target ports.

26. The apparatus of claim 25 wherein said second target comprises a black body, and including means for differentially combining energy reflected through said exit port from said first and second target ports.

27. The apparatus of claim 25 including means for moving said mirror between first and second positions in which it reflects energy from said first and second target ports respectively.

28. The apparatus of claim 27 wherein said mirror is mounted for pivotal motion about an axis aligned with said exit port and wherein said target ports are positioned to reflect light from one or the other thereof to said mirror and through said exit port when said mirror is pivoted to said first or second positions thereof.

29. The apparatus of claim 28 wherein said energy source provides optical energy, wherein a light reflecting sample is mounted at said first target port as said first target, and wherein a black body is mounted at said second target port as said second target.

30. The apparatus of claim 25 wherein said cavity is formed with a third target port, and including means for mounting a third target to said cavity at said third port for illumination by energy reflected within said cavity, said mirror being mounted to reflect energy from said third port through said exit port.

31. The apparatus of claim 30 wherein targets mounted at said first, second and third target ports comprise, respectively, a sample, a black body and a white standard.

32. The apparatus of claim 30 including an energy-sensitive device positioned to receive energy from said exit port, means for positioning said mirror to reflect energy through said exit port from said first, second and third target ports in a predetermined sequence, and means responsive to said device for subtracting energy received thereby from said second target port from energy received thereby from said first and third target ports.

33. The apparatus of claim 32 including an energy dispersing grating for transmitting to said energy-sensitive device spectra of energy projected from said exit port.

34. The apparatus of claim 33 wherein targets mounted at said first, second and third target ports comprise, respectively, a sample, a black body and a white standard.

35. The apparatus of claim 33 wherein said energy-sensitive device comprises an image tube having a photo-sensitive surface for receiving said spectra and having a scanning beam providing an output electrical signal, said tube including means for moving said scanning beam in a first direction across the length of each of said spectra and in a second direction in a plurality of scans across the width of each of said spectra, and means for storing the output electrical signal of said scanning beam at a number of said scans.

36. The apparatus of claim 35 including means for causing said scanning beam to repetitively move across the length of each of said spectra a number of times before the next spectrum is received by said photo-sensitive surface.

37. The apparatus of claim 25 wherein said cavity comprises an inner spherical surface of a hollow body and includes an input port positioned to receive energy from said source, said input port being axially aligned with said exit port, and means for blocking direct transmission of energy from said input port to said exit port.

38. The apparatus of claim 37 including a mirror support mounted to and extending at least partly within said body for pivotal motion about the axis of said port, said mirror being fixed to said support and having a reflective surface lying in a plane that extends at an angle relative to the axis of said exit port.

39. The apparatus of claim 38 wherein said means for blocking direct transmission comprises a diffuser reflecting body on said support between said mirror and said input port, whereby energy transmitted through said input port from said source is reflected from said reflecting body to said spherical surface before impinging upon said targets.