21. An analytical instrument for determining the composition, structure, or other characteristics of a sample in which in operation the sample is irradiated with x rays, gamma rays, neutrons, or a charged particle beam which originate in a primary radiation source, the analytical instrument comprising:

a) a secondary source of radiation;

b) a multiple-channel, multiple-total-external reflection x-ray, gamma-ray, neutron, or charged particle beam controller, comprising [at least one] *a plurality of individual capillary-based* essentially unitary multiple-hollow-channel elements;

c) sample positioning means; and

d) radiation detection means;

elements a, b, c, and d being positioned in a radiation pathway comprising volumes of space which in operation contain primary radiation, secondary radiation, or radiation emerging from the sample.

26. A method for determining the composition, structure, or other characteristics of a sample in which the sample is irradiated with x rays, gamma rays, neutrons, or a charged particle beam, the method comprising the steps of:

a) providing a source of said radiation;

b) directing the radiation produced by the source at a multiple-channel, multiple-total-external reflection x-ray, gamma-ray, neutron, or charged particle beam controller, comprising [at least one] *a plurality of individual capillary-based* essentially unitary multiple-hollow-channel elements;

c) contacting the sample to be analyzed with the radiation exiting the radiation controller; and

d) detecting the radiation emerging from the sample.

31. The analytical instrument of claim 1, wherein the polycapillary bundle-elements are rigidly fitted to one another by their external surfaces.

32. The analytical instrument of claim 31, wherein channel width is variable along the length of said channels.

33. The analytical instrument of claim 1, wherein channel width is variable along the length of said channels.

34. The analytical instrument of claim 1, wherein said polycapillary-bundle elements are spatially located with a rigid honeycomb structure formed by the walls of the elements rigidly fitted to one another.

35. The analytical instrument of claim 1, wherein said polycapillary-bundle elements are drawn by thermoplastic heating.

36. The analytical instrument of claim 12, including a polycapillary bundle-element as at least one of said multiple-hollow-channel elements.

37. The analytical instrument of claim 36, wherein said polycapillary bundle-element comprises a plurality of interconnected capillaries.

38. The analytical instrument of claim 37, including multiple polycapillary bundle-elements, rigidly fitted to one another by their external surfaces.

39. The analytical instrument of claim 37, wherein said multiple-hollow-channel elements are drawn by thermoplastic heating.

40. The analytical instrument of claim 36, wherein channel width is variable along the length of said at least one of said multiple channels.

41. The analytical instrument of claim 12, wherein channel width is variable along the length of said channels.

42. The analytical instrument of claim 12, wherein said multiple-hollow-channel elements are spatially located with a rigid honeycomb structure formed by the walls of the elements rigidly fitted to one another.

43. The analytical instrument of claim 21, including a polycapillary bundle-element as at least one of said multiple-hollow-channel elements.

44. The analytical instrument of claim 43, wherein said polycapillary bundle-element comprises a plurality of interconnected capillaries.

45. The analytical instrument of claim 44, including multiple polycapillary bundle-elements, rigidly fitted to one another by their external surfaces.

46. The analytical instrument of claim 44, wherein said multiple-hollow-channel elements are drawn by thermoplastic heating.

47. The analytical instrument of claim 43, wherein channel width is variable along the length of said at least one of said multiple channels.

48. The analytical instrument of claim 21, wherein channel width is variable along the length of said channels.

49. The analytical instrument of claim 21, wherein said multiple-hollow-channel elements are spatially located with a rigid honeycomb structure formed by the walls of the elements rigidly fitted to one another.

50. The method of claim 26, wherein at least one of said multiple-hollow-channel elements comprises a polycapillary bundle-element.

51. The method of claim 50, wherein said polycapillary bundle-element comprises a plurality of interconnected capillaries.

52. The method of claim 51, wherein said polycapillary bundle-elements are rigidly fitted to one another by their external surfaces.

53. The method of claim 51, wherein said multiple-hollow-channel elements are drawn by thermoplastic heating.

54. The method of claim 50, wherein channel width is variable along the length of said at least one of said multiple channels.

55. The method of claim 26, wherein channel width is variable along the length of said channels.

56. The method of claim 26, wherein said multiple-hollow-channel elements are spatially located with a rigid honeycomb structure formed by the walls of the elements rigidly fitted to one another.

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