We claim:

1. A vibrating meter (200, 400, 500, 700, 1000) comprising:

a vibrating element (202, 402, 502, 702, 1002) comprising a longitudinal direction (228) and a cross-sectional area (230) in a plane (231) perpendicular to the longitudinal direction (228), the vibrating element (202, 402, 502, 702, 1002) moving between a first position (302) and a second position (304) in the plane (231) perpendicular to the longitudinal direction (228);

a boundary element (232, 432, 532, 732, 1032) adjacent to the vibrating element (202, 402, 502, 702, 1002); and

an electronics (118) operable to drive the vibrating element (202, 402, 502, 702, 1002) between the first position (302) and the second position (304);

wherein the boundary element (232, 432, 532, 732, 1032) and the vibrating element (202, 402, 502, 702, 1002) define a fluid velocity boosting gap (308, 408, 508, 754, 1008) in the plane (231) perpendicular to the longitudinal direction (228), the fluid velocity boosting gap (308, 408, 508, 754, 1008) having an average gap distance (309, 409, 509) between the boundary element (232, 432, 532, 732, 1032) and the vibrating element (202, 402, 502, 702, 1002) when the vibrating element (202, 402, 502, 702, 1002) is in a neutral position, the vibrating element (202, 402, 502, 702, 1002) having a gap-facing perimeter section (211) around the cross-sectional area (230) of the plane (231) facing the fluid velocity boosting gap (308, 408, 508, 754, 1008) having a gap perimeter length, and a ratio of the gap perimeter length to the average gap distance (309, 409, 509) is at least 160, and the average gap distance (309, ~~40~~409, 509) is at least 0.1 mm.

2. A vibrating meter (200, 400, 500, 700, 1000) comprising:

a vibrating element (202, 402, 502, 702, 1002) comprising a longitudinal direction (228) and a cross-sectional area (230) in a plane (231) perpendicular to the longitudinal direction (228), the vibrating element (202, 402, 502, 702, 1002) moving between a first position (302) and a second position (304) in the plane (231) perpendicular to the longitudinal direction (228);

a boundary element (232, 432, 532, 732, 1032) adjacent to the vibrating element (202, 402, 502, 702, 1002); and

an electronics (118) operable to drive the vibrating element (202, 402, 502, 702, 1002) between the first position (302) and the second position (304),

wherein the boundary element (232, 432, 532, 732, 1032) and the vibrating element (202, 402, 502, 702, 1002) define a fluid velocity boosting gap (308, 408, 508, 754, 1008) in the plane (231) perpendicular to the longitudinal direction (228), the fluid velocity boosting gap (308, 408, 508, 754, 1008) having an average gap distance (309, 409, 509) between the boundary element (232, 432, 532, 732, 1032) and the vibrating element (202, 402, 502, 702, 1002) when the vibrating element (202, 402, 502, 702, 1002) is in a neutral position, the average gap distance (309, 409, 509) being between 0.25 mm and 0.1 mm.

3. A vibrating meter (200, 400, 500, 700, 1000) as claimed in any one of the preceding claims, wherein the average gap distance (309, 409, 509) is 0.2 mm or less.

4. A vibrating meter (200) as claimed in any one of the preceding claims, wherein the vibrating element (202) is a first tine (234a) and the boundary element (232) is a housing (204).

5. A vibrating meter (1000) as claimed in any one of the preceding claims, wherein the vibrating element (1002) is a first tine (1034a) and the boundary element (1032) is a second tine (1034b).

6. A vibrating meter (400) as claimed in any one of the preceding claims, wherein the vibrating element (402) is a cylinder (116).

7. A vibrating meter (500, 700) as claimed in any one of the preceding claims, wherein the vibrating element (502, 702) is a planar resonator (550).

8. A vibrating meter (200, 400, 500, 700, 1000) as claimed in any one of the preceding claims, wherein a density sensitivity of the vibrating meter (200, 400, 500, 700, 1000) is greater than 1400 ns/ kg/m3 when the fluid is a gas.

9. A vibrating meter (200, 400, 500, 700, 1000) as claimed in any one of the preceding claims, wherein a viscosity sensitivity is greater than 1.949 x 10^{-7} μPa.s when the fluid is a gas.

10. A method of determining a viscosity or a density of a fluid using the vibrating meter (200, 400, 500, 700, 1000) as defined by any one of claims 1 or 2, the method comprising:

driving the vibrating element (202, 402, 502, 702, 1002) between the first position (302) and the second position (304) using a driver (112) and an electronics (118); and

determining a natural frequency of the vibrating element (202, 402, 502, 702, 1002) using a sensor and the electronics (118).

11. A method as claimed in claim 10, wherein the average gap distance (309, 409, 509) is 0.2 mm or less.

12. A method as claimed in any one of claims 10 to 11, wherein the vibrating element (202) is a first tine (234a) and the boundary element (232) is a housing.

13. A method as claimed in any one of claims 10 to 11, wherein the vibrating element (1002) is a first tine (1034a) and the boundary element (1032) is a second tine (1034b).

14. A method as claimed in any one of claims 10 to 11, wherein the vibrating element (202, 402, 502, 702, 1002) is a cylinder (116).

15. A method as claimed in any one of claims 10 to 11, wherein the vibrating element (502) is a planar resonator (550).

16. A method as claimed in any one of claims 10 to 15, wherein a density sensitivity of the vibrating meter (200, 400, 500, 700, 1000) is greater than 1400 ns/ kg/m3 when the fluid is a gas.

17. A method as claimed in any one of claims 10 to 16, wherein a viscosity sensitivity is greater than 1.949 x 10^{-7} µPa.s when the fluid is a gas.

18. A method as claimed in any one of claims 10 to 17, wherein a driving frequency at which the vibrating element (202, 402, 502, 702, 1002) is driven between the first position (302) and the second position (304) is below 600Hz.

19. A method for assembling the vibrating meter (200, 400, 500, 700, 1000) as defined by any one of claims 1 to 2, the method comprising:

providing the vibrating element (202, 402, 502, 702, 1002);

providing the boundary element (232, 432, 532, 732, 1032);

coupling the boundary element (232, 432, 532, 732, 1032) adjacent to the vibrating element (202, 402, 502, 702, 1002) to define the fluid velocity boosting gap (308, 408, 508, 754, 1008); and

coupling the electronics (118) to the vibrating meter (200, 400, 500, 700, 1000).

20. A method as claimed in claim 19, wherein the average gap distance (309, 409, 509) is 0.2 mm or less.

21. A method as claimed in any one of claims 19 to 20, wherein the vibrating element (202) is a first tine and the boundary element (232) is a housing.

22. A method as claimed in any one of claims 19 to 20, wherein the vibrating element (1002) is a first tine (1034a) and the boundary element (1032) is a second tine (1034b).

23. A method as claimed in any one of claims 19 to 20, wherein the vibrating element (202, 402, 502, 702, 1002) is a cylinder (116).

24. A method as claimed in any one of claims 19 to 20, wherein the vibrating element (502) is a planar resonator (550).

25. A method as claimed in any one of claims 19 to 24, wherein a density sensitivity of the vibrating meter (200, 400, 500, 700, 1000) is greater than 1400 ns/ kg/m3 when the fluid is a gas.

5

26. A method as claimed in any one of claims 19 to 25, wherein a viscosity sensitivity is greater than 1.949×10^{-7} µPa.s when the fluid is a gas.