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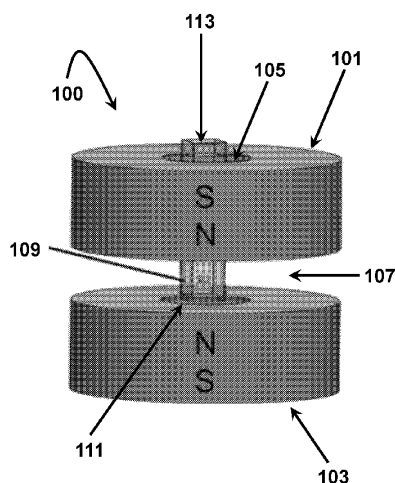


FIG. 1B

(57) Abstract: A magnetic levitation system is described, including a first cylinder-shaped magnet; a second cylinder-shaped magnet coaxially aligned with the first cylinder-shaped magnet; and a first cavity coaxially aligned with the first cylinder-shaped magnet; wherein the surfaces of the like-poles of the first and second cylinder-shaped magnets are parallel to each other and face each other to result in a linear magnetic field between the first and the second magnets. Methods of using a magnetic levitation system for analyzing a diamagnetic or paramagnetic sample are also described.

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