

Constructing the Brownian Motion Simulator

By Richard Born

The orbital shaker used by the author was purchased new for less than \$80 on eBay. Similar orbital shakers are also available on Amazon as of the date of the writing of this lesson. The orbital shaker is variable speed—from 0 to 210 rpm. The highest speed was used by the author in the Brownian motion lab.

Step 1: Using 3M Damage-Free hanging strips, attach a $\frac{3}{4}$ " wood cube to each corner of the orbital shaker platform, as shown in Figure 1. The wood cubes were purchased at a Michaels hobby store.



Figure 1

Step 2: Cut four $\frac{1}{2}$ " bass wood sticks to construct the frame shown in Figure 2. The bass wood sticks were purchased at Hobby Lobby. Use corner braces to provide for a solid frame that will withstand the motion of the orbital shaker. The corner braces were purchased from Menards. The NSTA ruler shows that the inside distance between the two smaller sticks is about 6". The frame is then attached to the four wood cubes using 3M Damage-Free hanging strips.

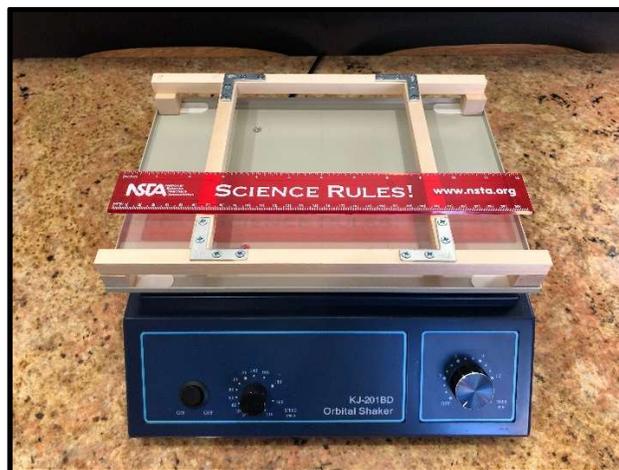


Figure 2

Step 3: Cut a piece of 3/16" foam board 9" by 20". Draw crosshairs and a 4.75" circle on the center of the foam board. Slip the foam board into the slot between the wood frame and the platform of the orbital shaker so that the circle is centered in the wood frame.

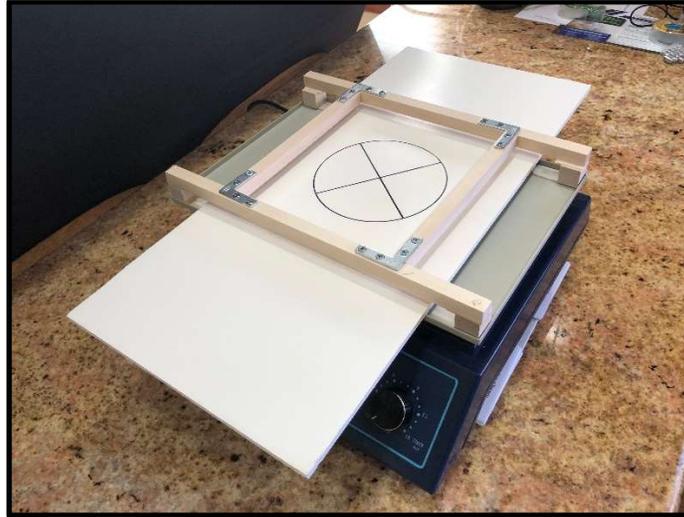


Figure 3

Step 5: Use books or whatever you wish on each side of the foam board to raise the foam board so that its surface is about 1/16" below the bottom of the wood frame. Use some removable double-sided tape to tape the board to the books. You may need to use some pieces of paper to adjust the height of the orbital shaker so that it is reasonably level, as shown at the bottom of Figure 4.



Figure 4