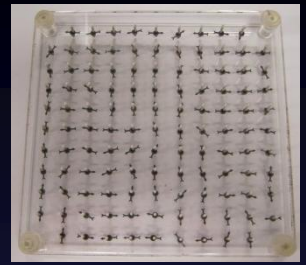


# MAGNETIC MODEL FIELD

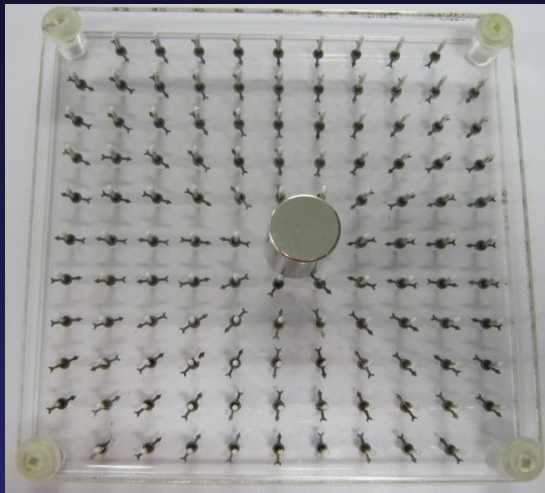
## What to do

1. **Move a magnet near the surface of the magnetic model field**
2. **Turn the magnet on its side**

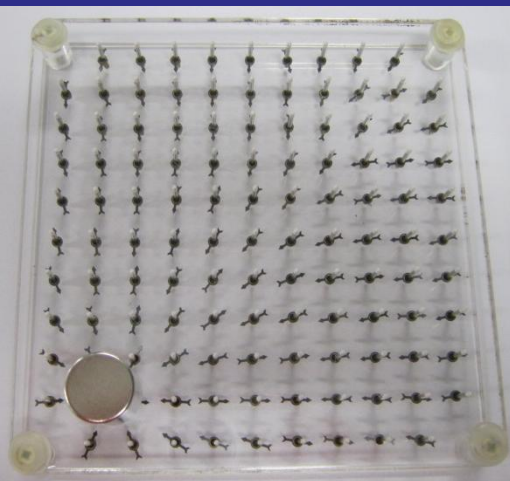


Magnetic fields are a mathematical description of the magnetic effects that occur in a vector field. Magnetic fields are produced by permanent magnets, as well as by electric currents. The magnetic model field illustrates the direction that field lines have in magnetic fields, allowing the direction which magnetic forces act in to be easily visualised. The magnetic model field is influenced by the local magnetic field.

Place the end of a magnet above the magnetic model field. One end of the iron arrows is attracted to the local magnetic field produced by the permanent magnets and, being free to rotate, will turn toward it. This attraction occurs because iron is a ferromagnetic material. The magnetic dipoles of the electrons in the iron align with the external magnetic field and this is the rotation that is seen.



North poles attract South poles and repel other North poles. If you turn the magnet so that the other face is closer to the magnetic model field, you should see the arrows reverse their previous direction. The side of the magnets that was attracted to the first magnetic pole is now repelled, the end of the magnetic arrows that was repelled is now attracted. Moving the magnet around, the magnetic arrows will follow the magnet.



Magnetic field lines are visible if you turn the magnet on its side, so that the poles of the magnet are vertical. At each end of the magnet, closest to the poles at the end faces, different ends of the arrows in the magnetic model field will point toward (or away from) each of the magnet's poles. At the sides of the magnet, the arrows align themselves with the magnetic field of the magnet; facing toward one pole and away from the other. Further away, the arrows curve around as each of their ends is attracted to a different side of the magnet.

