

(a) high temperature



(b) low temperature

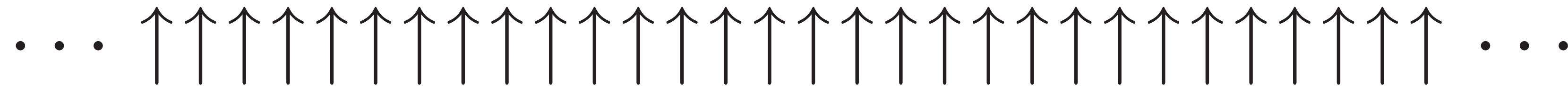
Picture of paramagnetic material

# Energetics and States

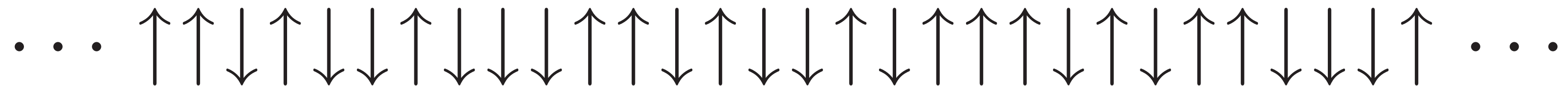
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Magnetic Field

This state has the lowest energy



But there are many more states that look like this



At a fixed temperature and magnetic field we are to minimize,  $F = U - TS$