or more layers that appear to have been folded to form looped edges, as seen in Fig. 33. The edge structure is closely related to that of a ribbon formed of a collapsed nanotube with a wide diameter. [More...]

References:

**Fowler-Nordheim** relationship describes the electron emission from a surface normal to which a strong local electric field $E$ has been applied. The tunneling electron current density is given by $J = aE^2 \exp\left(-\frac{b\phi^{3/2}}{\beta E}\right)$, where $\phi$ is the work function, $a$ and $b$ are constants, and $\beta$ is the field amplification factor. For a sparse array of vertically aligned nanotubes of radius $r$ and height $h$, the large value of $\beta = h/r$ contributes significantly to high observed current densities $\lesssim 10^9$ A/cm$^2$, which correspond to currents of $\lesssim 1 \mu$A per nanotube. [More...]

**Fractional quantum Hall effect** → **quantum Hall effect**

**Fullerene** is a molecule with a hollow cage structure consisting of graphitic carbon. The name reflects structural relationship to geodesic domes constructed by the architect Richard Buckminster Fuller. The most noted fullerene is the $C_{60}$ molecule, called also buckminsterfullerene or simply buckyball. The smallest fullerene is the $C_{20}$. Among the possible fullerene synthesis routes, arc evaporation is most common. Selected fullerenes with less than 100 carbon atoms are shown in Fig. 34. Larger fullerenes, such as the one shown in Fig. 35, have not been observed as single-wall structures, but may form walls in multi-wall fullerenes, called onions. The time line of fullerene discoveries is listed in Table 1. [More...]

References:
P. W. Fowler and D. E. Manolopoulos, An atlas of fullerenes (Dover, 2006).

**Fullerene isomer** is a well-defined structure of a fullerene. The number of isomers, corresponding to the number of ways to distribute 12 pentagons and $n/2 - 10$ hexagons on a $C_n$ surface,
Figure 34: Structural models of selected $C_n$ fullerenes with $n < 100$ atoms. Most stable isomers with $n \geq 60$ atoms comply with the isolated pentagon rule (IPR).

Increases rapidly with the size $n$. [More...]

Fullerene separation from soot containing a mixture of fullerene and metallofullerene molecules with different sizes can be achieved efficiently by High-Pressure Liquid Chromatography (HPLC) with suitable columns, such as the ‘buckyclutcher’ or ‘buckyprep’ columns. [More...]