

A photograph of a nuclear power plant. Two large, grey, conical cooling towers are prominent in the foreground, with thick white plumes of steam rising from them. To the right, a tall, thin smokestack stands against a clear blue sky. In the background, two large, white, cylindrical containment domes are visible. The plant is situated in a green, grassy area with some trees and a fence in the distance.

14. Kernenergie

Physikalische Grundlagen

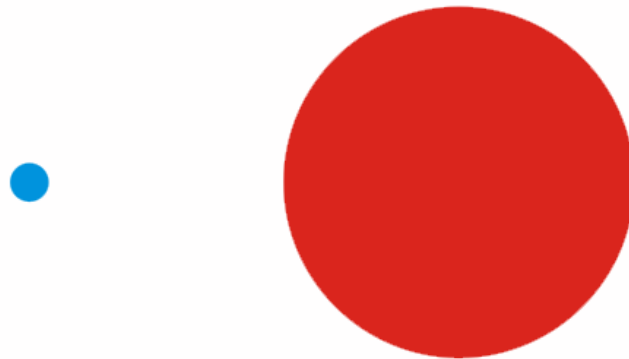
Kernreaktor

Radioaktivität

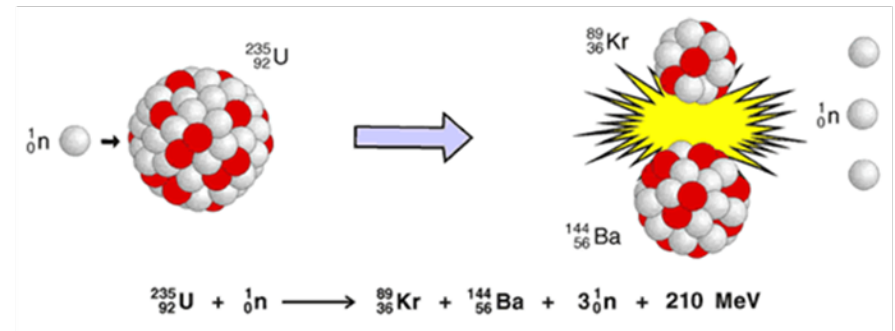
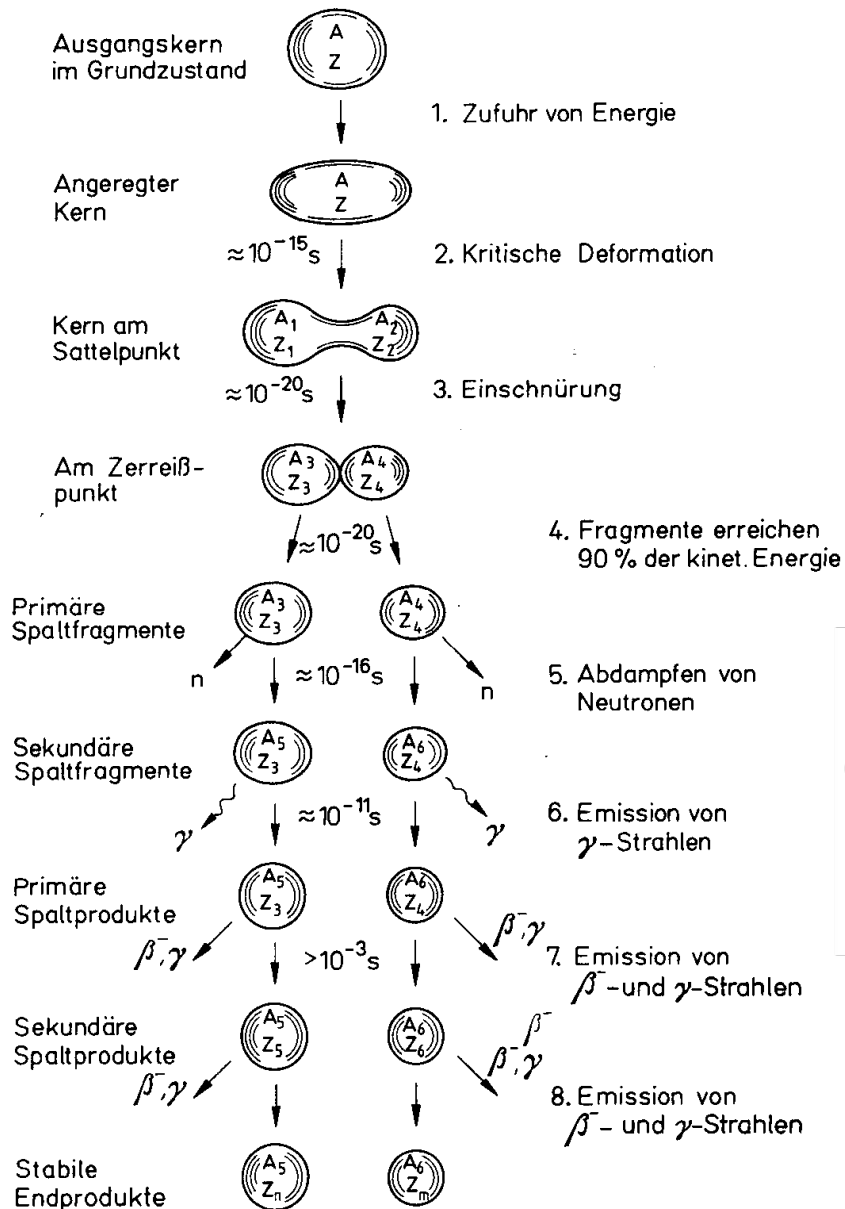
Die Zukunft der Kernenergie

Biographie: Otto Hahn

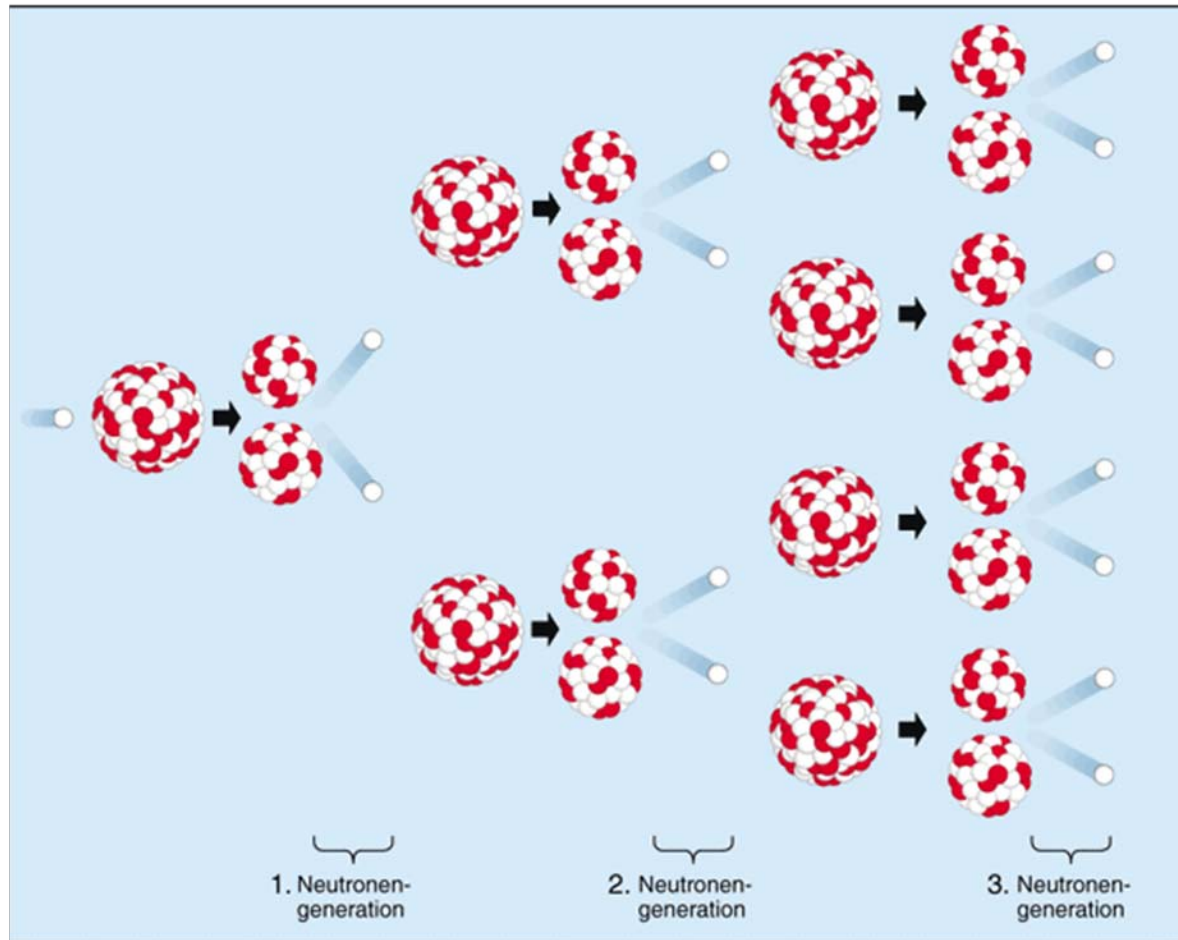
Kernspaltung – schematischer Ablauf



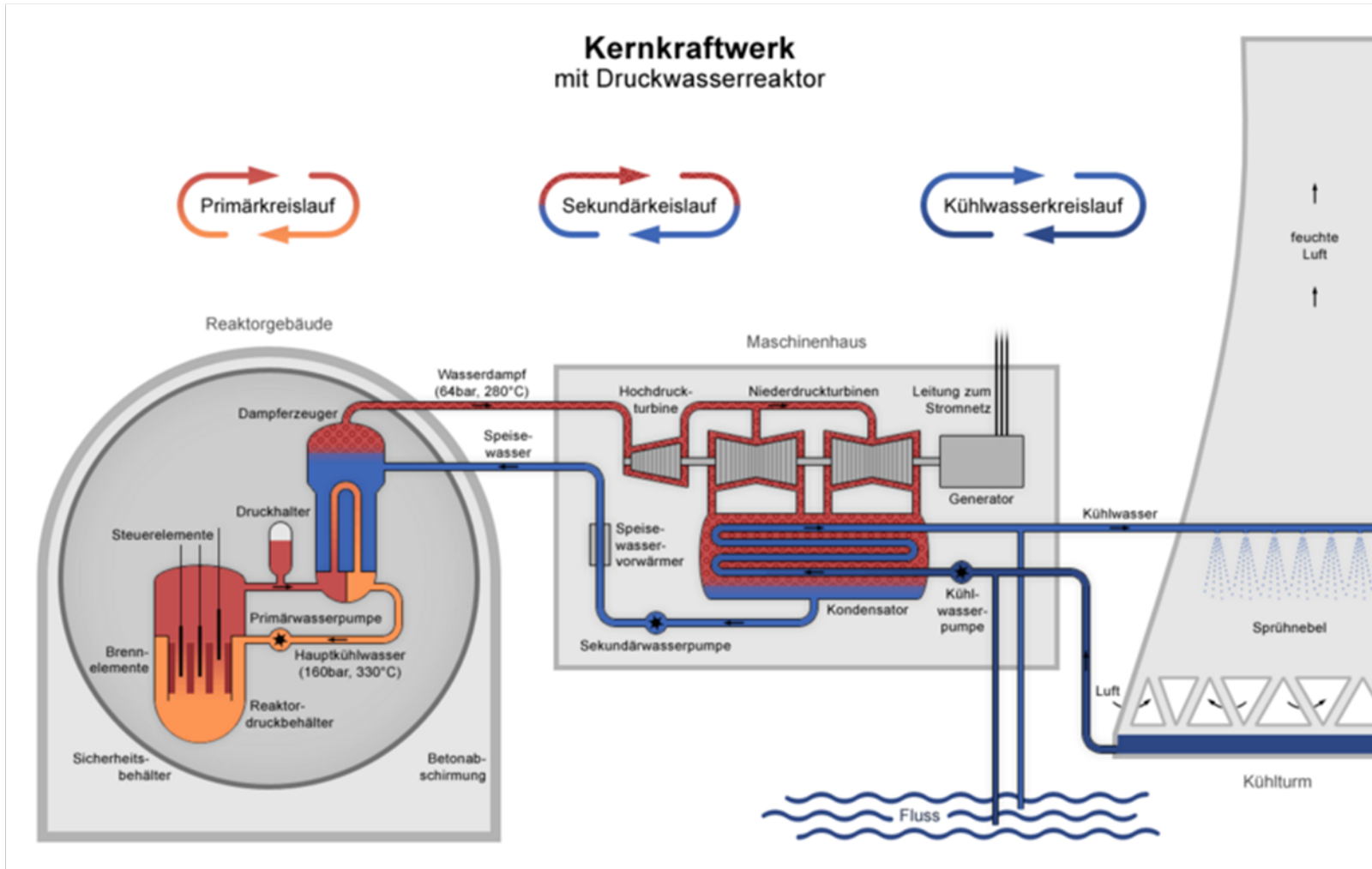
Kernspaltung



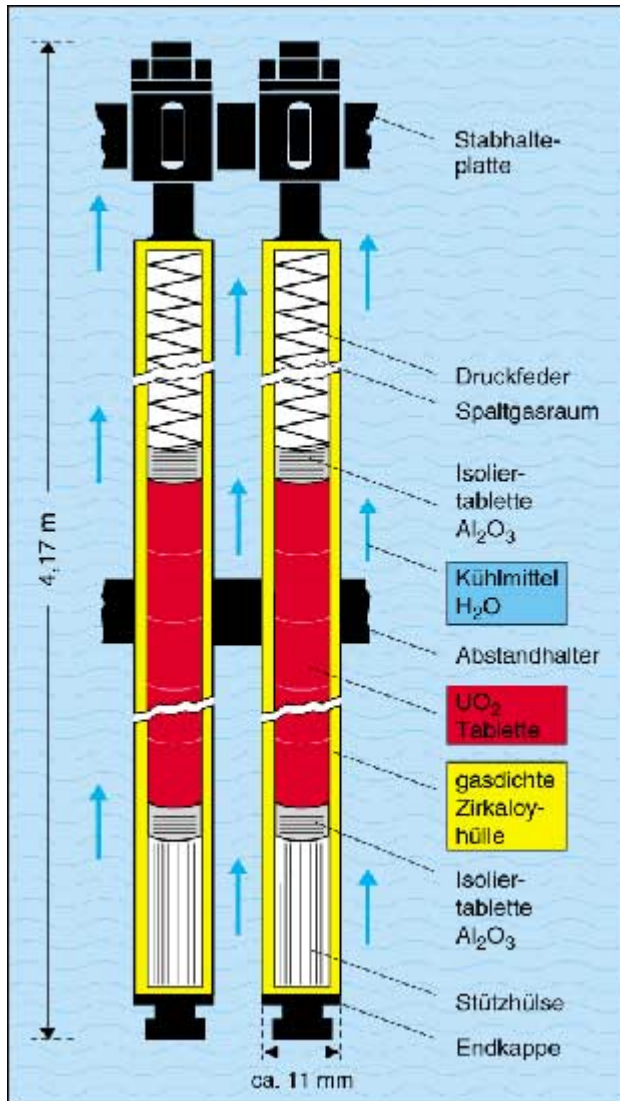
Kettenreaktion



Druckwasserreaktor



Brennstäbe und Brennelemente



Spaltprodukte

Medium-lived FPs / 10^6 thermal ^{235}U		
<u>Nuclide</u>	<u>Halflife</u>	<u>Yield</u>
<u>^{155}Eu</u>	4.76	≤ 330
<u>^{85}Kr</u>	10.76	2717
<u>$^{113\text{m}}\text{Cd}$</u>	14.1	≤ 3
<u>^{90}Sr</u>	28.9	57518
<u>^{137}Cs</u>	30.23	60899
<u>$^{121\text{m}}\text{Sn}$</u>	43.9	0.3
<u>^{151}Sm</u>	90	≤ 4203

Long-lived FPs / 10^6 thermal ^{235}U		
<u>Nuclide</u>	<u>Halflife</u>	<u>Yield</u>
<u>^{99}Tc</u>	211,000	60507
<u>^{126}Sn</u>	230,000	236
<u>^{79}Se</u>	295,000	508
<u>^{93}Zr</u>	1,530,000	62956
<u>^{135}Cs</u>	2,300,000	≤ 63333
<u>^{107}Pd</u>	6,500,000	1629
<u>^{129}I</u>	15,700,000	6576

Die Halbwertszeit ist in Jahren angegeben, die Ausbeute ist auf 1 Million Spaltungen bezogen.

Der Reaktor von Tschernobyl nach der Katastrophe im April 1986



Otto Hahn (1879 - 1968)

