

# Atommodelle

## **Leukipp, Demokrit (5. Jhd. v. Chr.)**

Materie: kleinste nicht teilbare Teilchen

## **Dalton (Anfang 19. Jhd.)**

Chemisches Element: gleiche unteilbare Atome

# Atommodelle

## Thomson (Mitte 19. Jhd.)

Atome: positiv geladene Materiekugeln mit eingebetteten Elektronen

## Rutherford (1911)

Atom (d  $10^{-10}$  m): Atomkern (d  $10^{-14}$  m), Atomhülle

# Atommodelle

## **Bohr (1913)**

Elektronenbahnen: Quantelung von Bahndrehimpuls und Energie

## **Heisenberg, Schrödinger, Pauli (ab 1925)**

Elektronenorbitale, Periodensystem der Elemente

# PERIODIC TABLE OF THE ELEMENTS

Table of Selected Radioactive Isotopes

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Naturally occurring radioactive isotopes are designated by a mass number in blue (though some are also manufactured). Letter in brackets indicates an isomer of another isotope of the same mass number. Half-lives follow in parentheses, where s, min, h, d, and y stand respectively for seconds, minutes, hours, days, and years. The table includes mainly the longer-lived radioactive isotopes; many others have been prepared. Isotopes known to be radioactive but with half-lives exceeding 10 <sup>10</sup> y have not been included. Symbols describing the principal mode (or modes) of decay are as follows (these processes are generally accompanied by gamma radiation):																	
α alpha particle emission β <sup>-</sup> beta particle (electron) emission β <sup>+</sup> positron emission EC orbital electron capture IT isomeric transition from upper to lower isomeric state SF spontaneous fission																	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.0079	4.0026	6.941	9.01218	10.81	12.01	14.0067	15.9994	18.998403	20.179	22.989769	24.96087	26.981538	28.96045	30.973762	32.06	34.968852	36.965803
H	He	Li	Be	B	C	N	O	F	Ne	Na	Mg	Al	Si	P	S	Cl	Ar
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.0079	4.0026	6.941	9.01218	10.81	12.01	14.0067	15.9994	18.998403	20.179	22.989769	24.96087	26.981538	28.96045	30.973762	32.06	34.968852	36.965803
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
39.0983	40.08	44.9559	47.90	50.9418	51.996	54.9380	55.847	58.9332	58.70	63.546	65.38	68.72	72.59	74.9216	78.96	79.904	83.80
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
39.0983	38.9637	38.9637	39.9624	40.9458	41.9526	42.9687	43.9547	44.9559	45.9325	46.9288	47.9478	48.9584	49.9624	50.9439	51.9404	52.9409	53.9403
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
85.4678	87.62	88.9059	91.22	92.9064	95.94	98.906	101.07	102.9055	106.4	106.4	112.41	114.82	118.69	121.75	127.60	126.9045	131.30
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104
87.223	226.0254	227.0278	223.0186	223.0186	223.0186	223.0186	223.0186	223.0186	223.0186	223.0186	223.0186	223.0186	223.0186	223.0186	223.0186	223.0186	223.0186
Fr	Ra	Ac	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

**KEY**

ATOMIC NUMBER

ATOMIC WEIGHT (2)

BOILING POINT, K

MELTING POINT, K

DENSITY at 300 K (3)

ELECTRON CONFIGURATION

NAME

SYMBOL (1)

OXIDATION STATES (Bold most stable)

★ (1) Black — solid  
Red — gas  
Blue — liquid  
Outline — synthetically prepared.

58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	
90	91	92	93	94	95	96	97	98	99	100	101	102	103	104
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr	

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