Between ‘Zero’ and ‘Infinity’

The 2007 Profile of the LTNFM

dr hab. Wojciech Grochala, Ph.D., D.Sc.

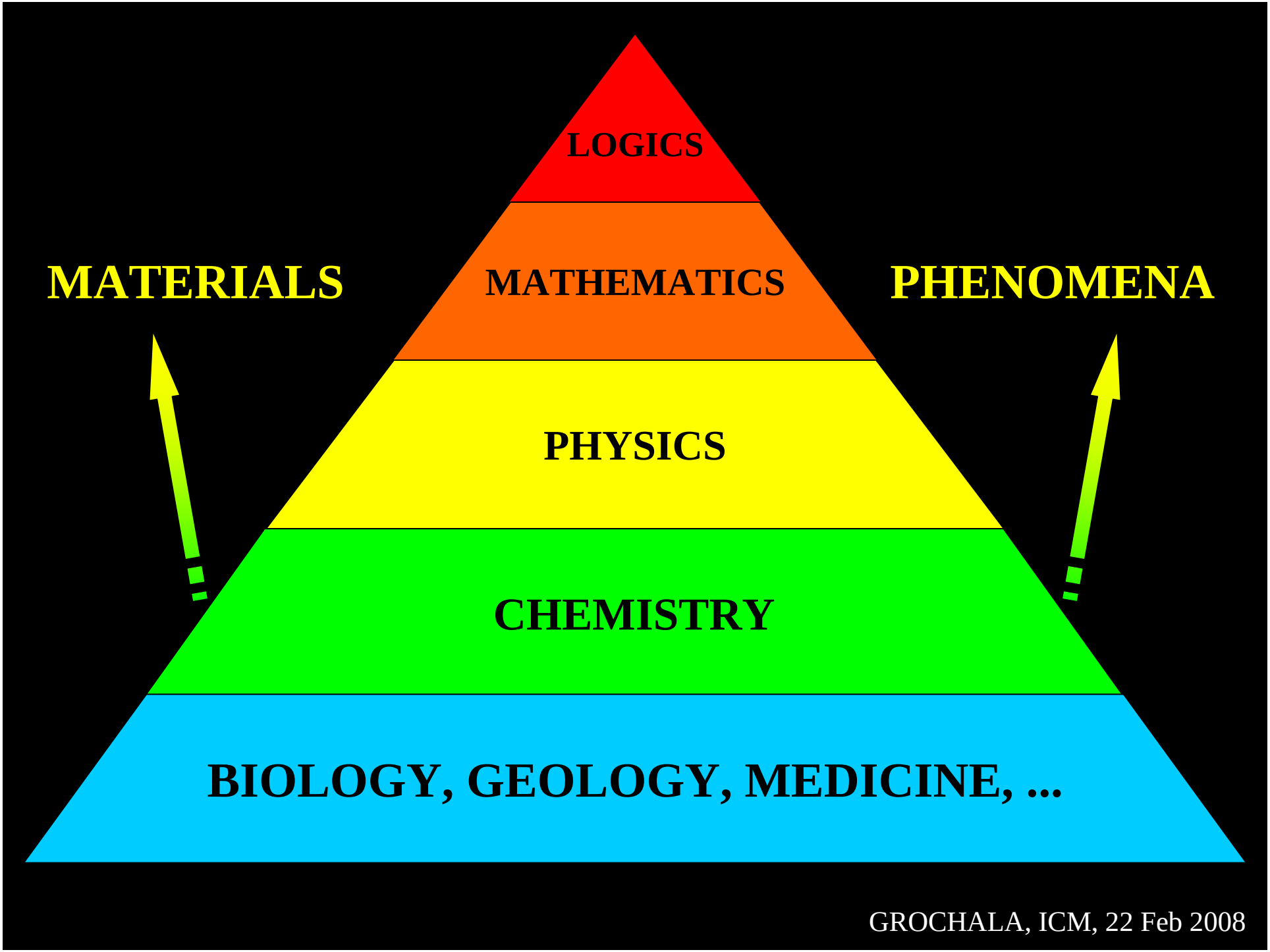
Interdisciplinary Center for Mathematical and Computational Modeling, University of Warsaw, Pawińskiego 5a, 02106 Warsaw, Poland

Web: http://ltnfm.icm.edu.pl/

E-mail: wg22@cornell.edu

Faculty of Chemistry, University of Warsaw
Pasteur 1, 02093 Warsaw
Tel. (22) 8220211 ext. 276, Fax. (22) 8222309
Web: http://www.chem.uw.edu.pl/people/WGrochala/

MKTI (ICM, Warsaw) 22 Feb 2008


LOGICS
MATHEMATICS
PHYSICS
CHEMISTRY
BIOLOGY, GEOLOGY, MEDICINE, ...
MATERIALS
PHENOMENA

MATERIALS

1. Novel Superconductors

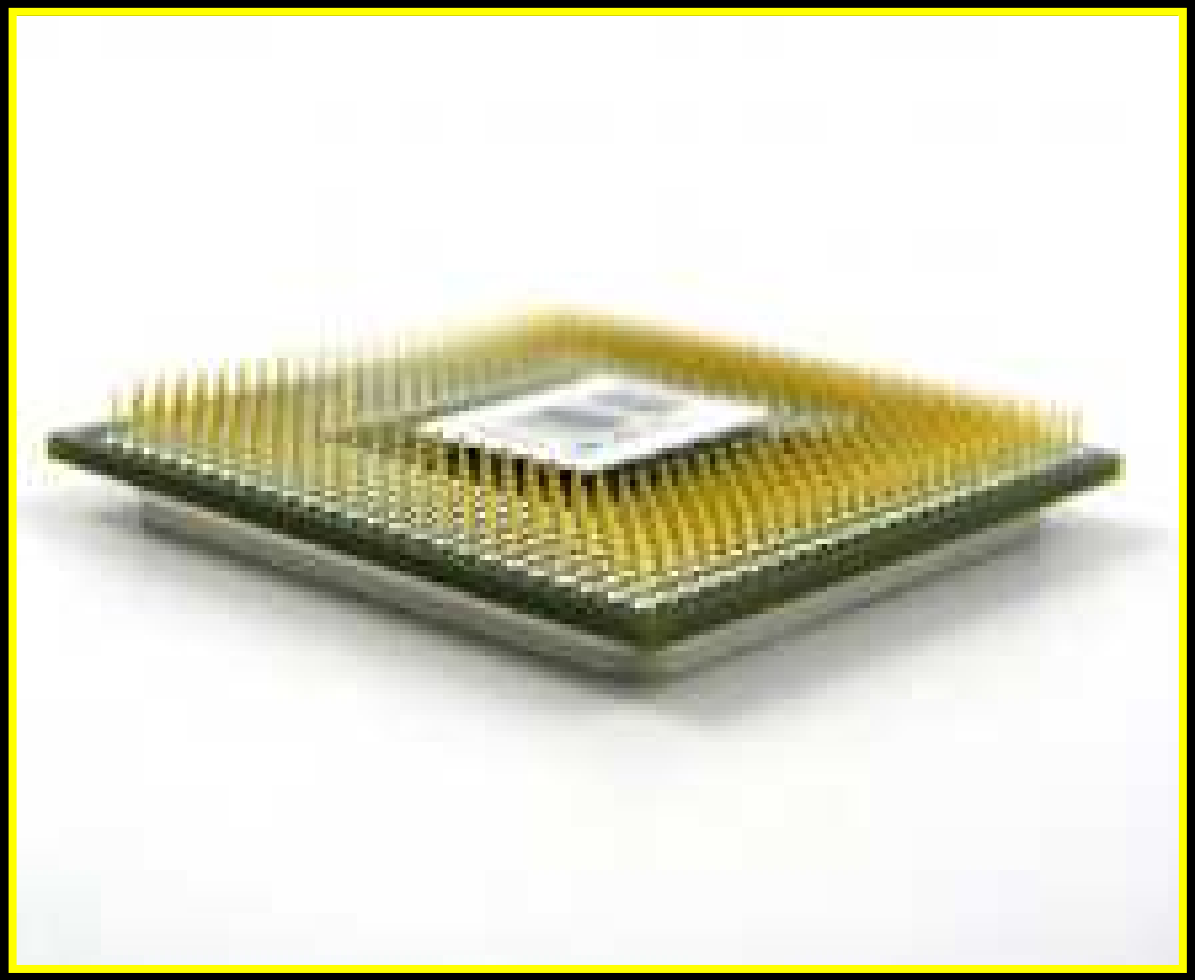
On The Continuing (Chemical) Challenge of High Temperature Superconductivity:

"Surely the problem can't be that difficult can it dear friend....
Just .....mix 'Perfect, Zero and Infinity' with our beloved Periodic Table.....
Regards and Hugs to you and all
Pete"

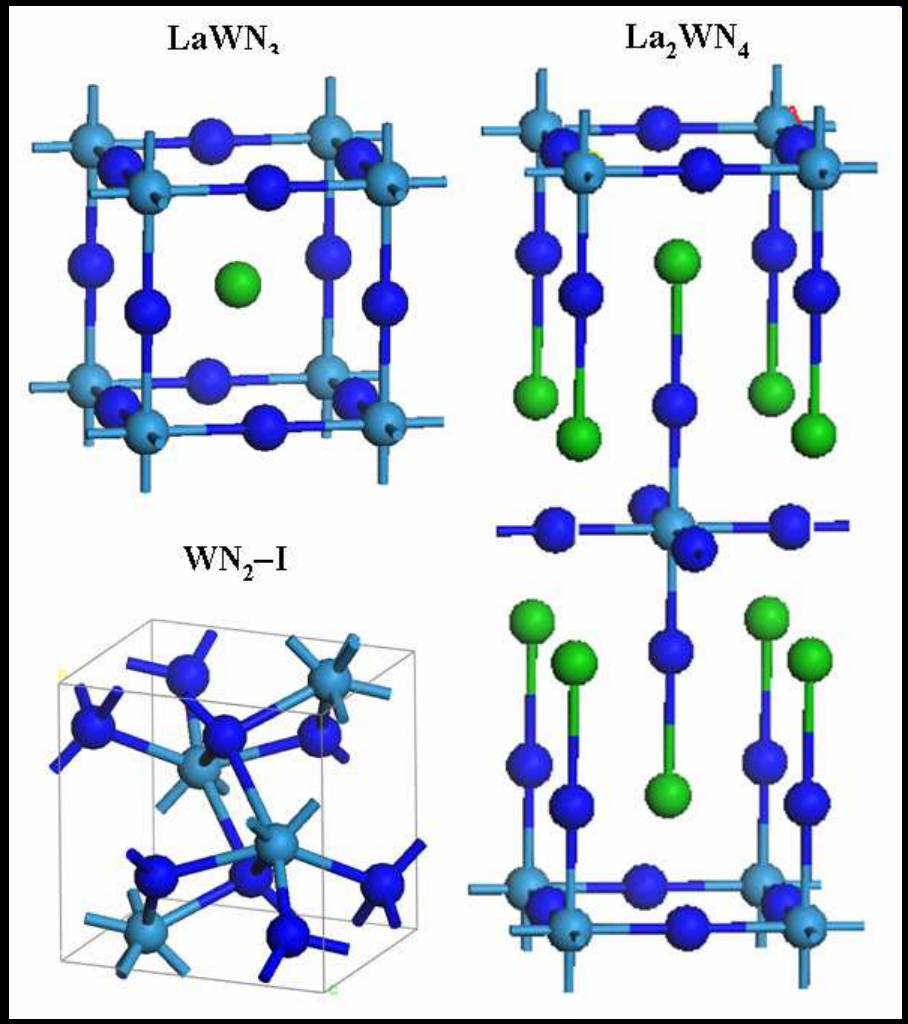
Peter P. Edwards, ICL, Oxford

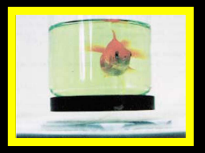
GROCHALA, ICM, 22 Feb 2008

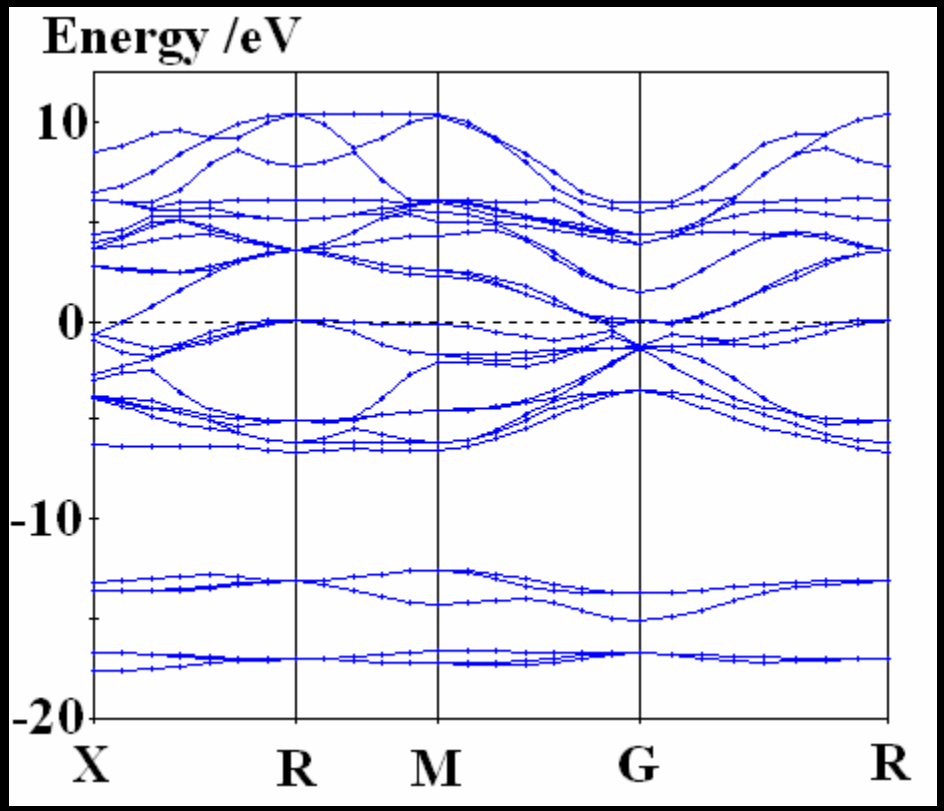
***Perfect* diamagnetism…**



***Zero* resistance…**







Hypothetical $LaW^{VI}N_3$

POL J CHEM 81(5-6): 613-620 (2007)
invited paper for a special issue

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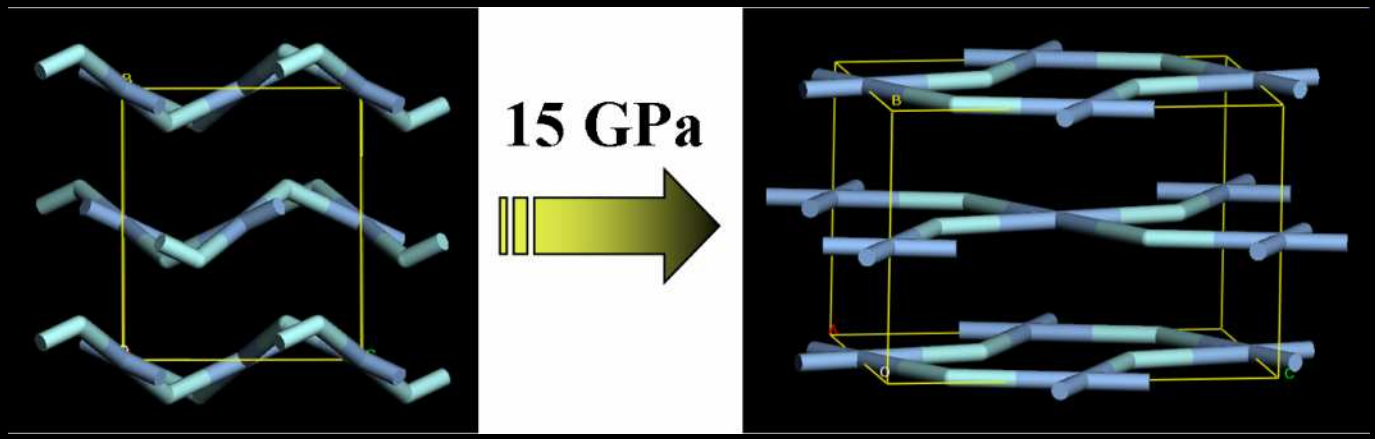
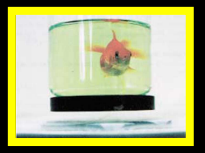
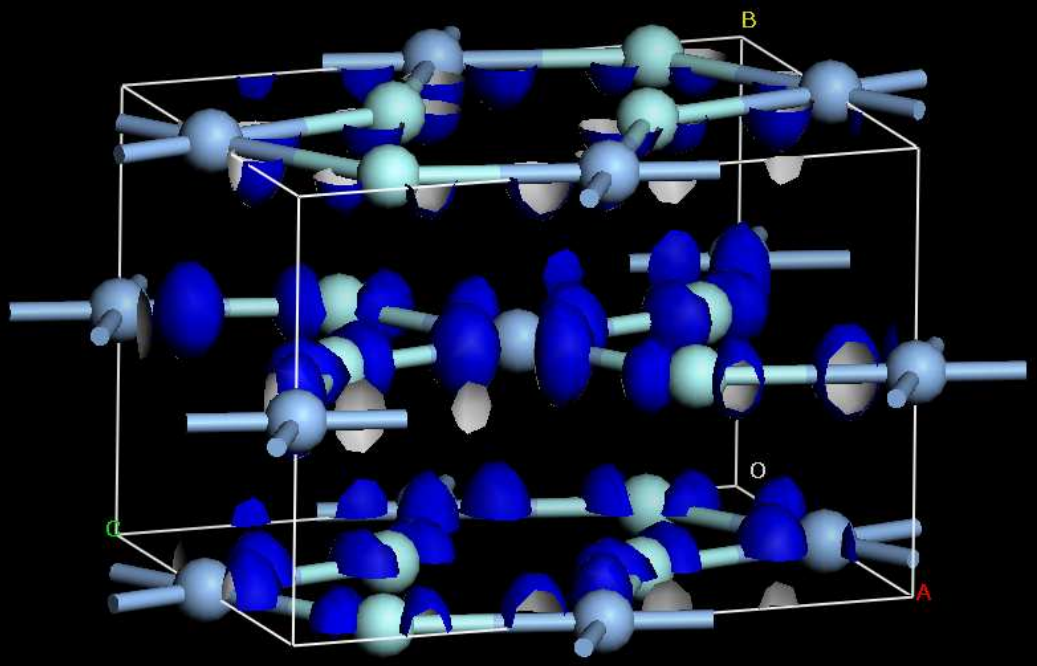
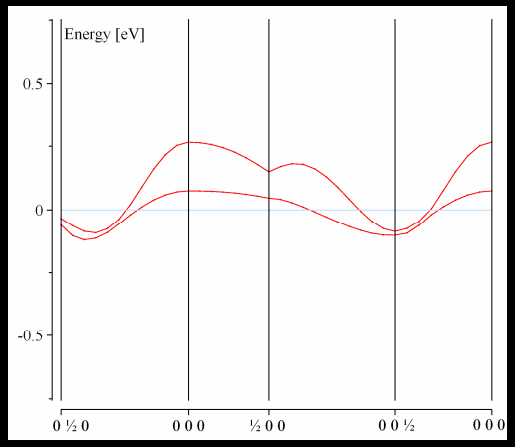


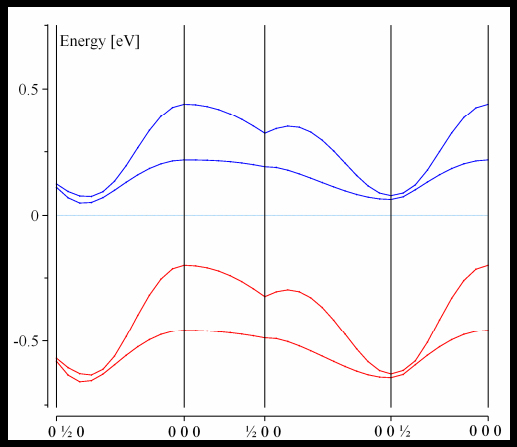


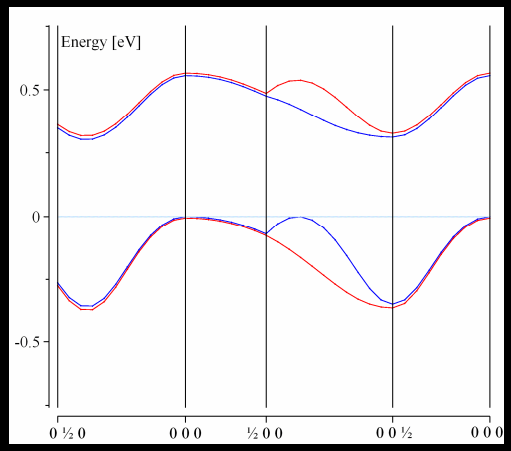


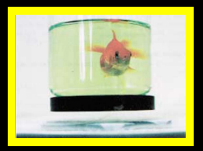
$Ag^{II}F_2$

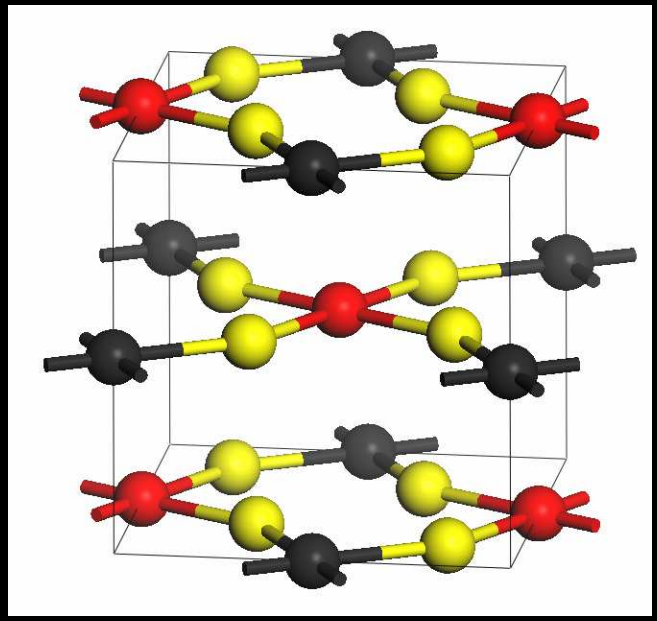
J PHYS COND MATTER 19(12): 116206 (2007)











PHYS STAT SOL B RRL 2(2): 71-73 2008

Dedicated to Arndt Simon, MPI Stuttgart

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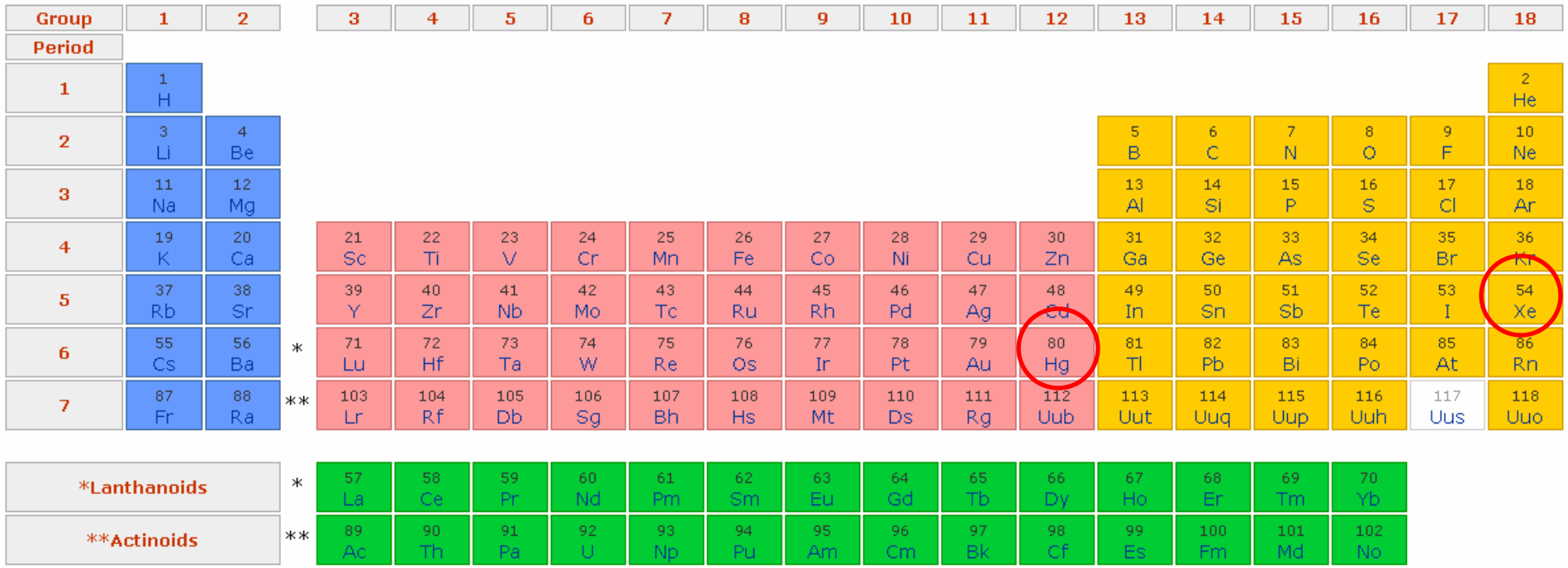
MATERIALS

2. Novel Chemical Bonds

WebElements™ periodic table



Group	1	2		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Period																			
1	1 H																		2 He
2	3 Li	4 Be												5 B	6 C	7 N	8 O	9 F	10 Ne
3	11 Na	12 Mg												13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
4	19 K	20 Ca		21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
5	37 Rb	38 Sr		39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
6	55 Cs	56 Ba	*	71 Lu	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
7	87 Fr	88 Ra	**	103 Lr	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112 Uub	113 Uut	114 Uuq	115 Uup	116 Uuh	117 Uus	118 Uuo
*Lanthanoids			*	57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb		
**Actinoids			**	89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No		

***Nearly all* elements bind to something…**

***Not all pairs* of elements bind…**

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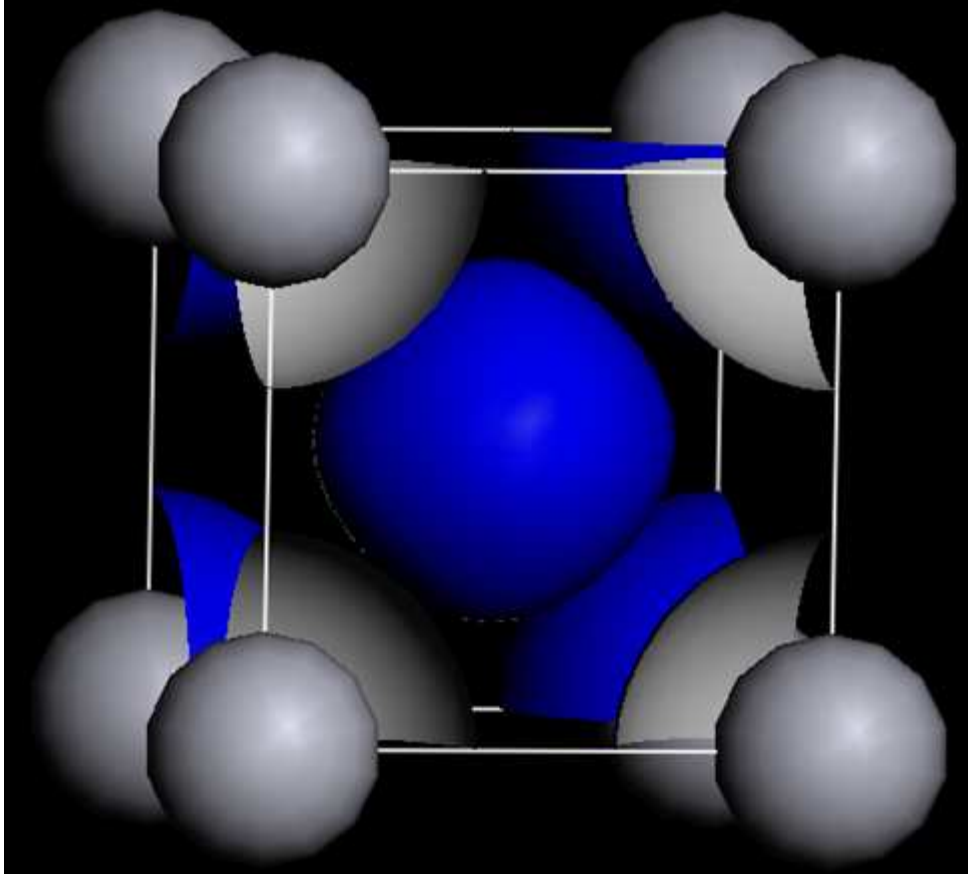
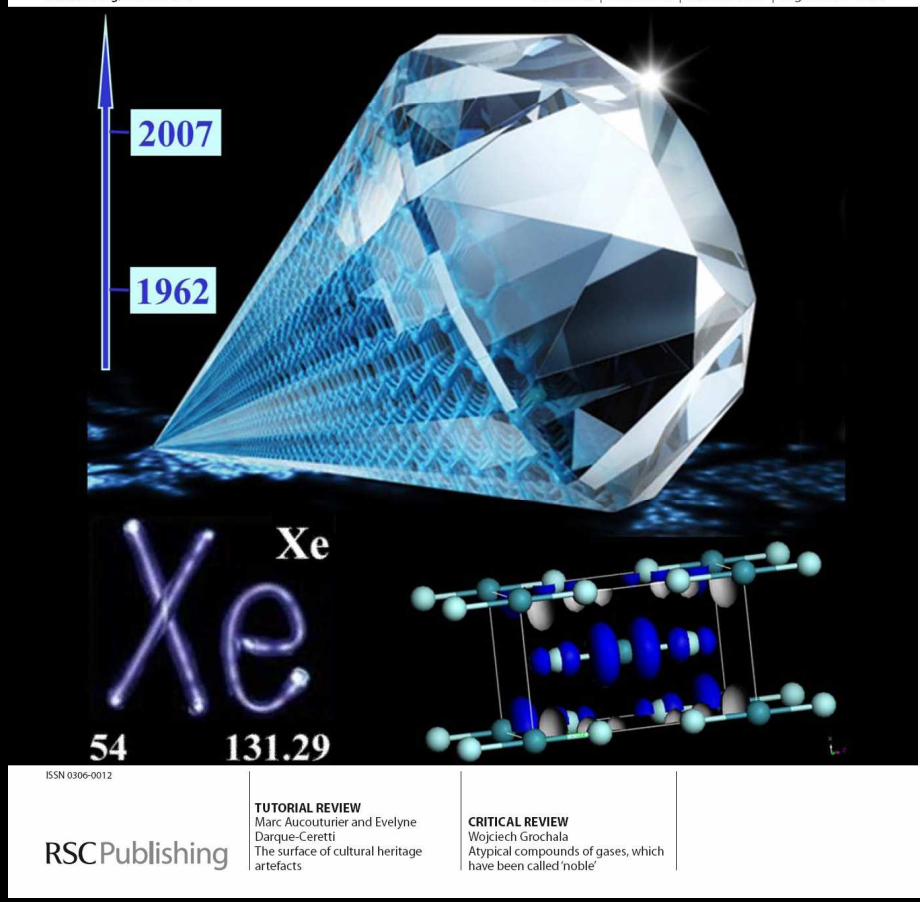
Hg–Xe amalgam @ 750,000 atm





CHEM SOC REV 36(10): 1632-1655 2007

Hot paper

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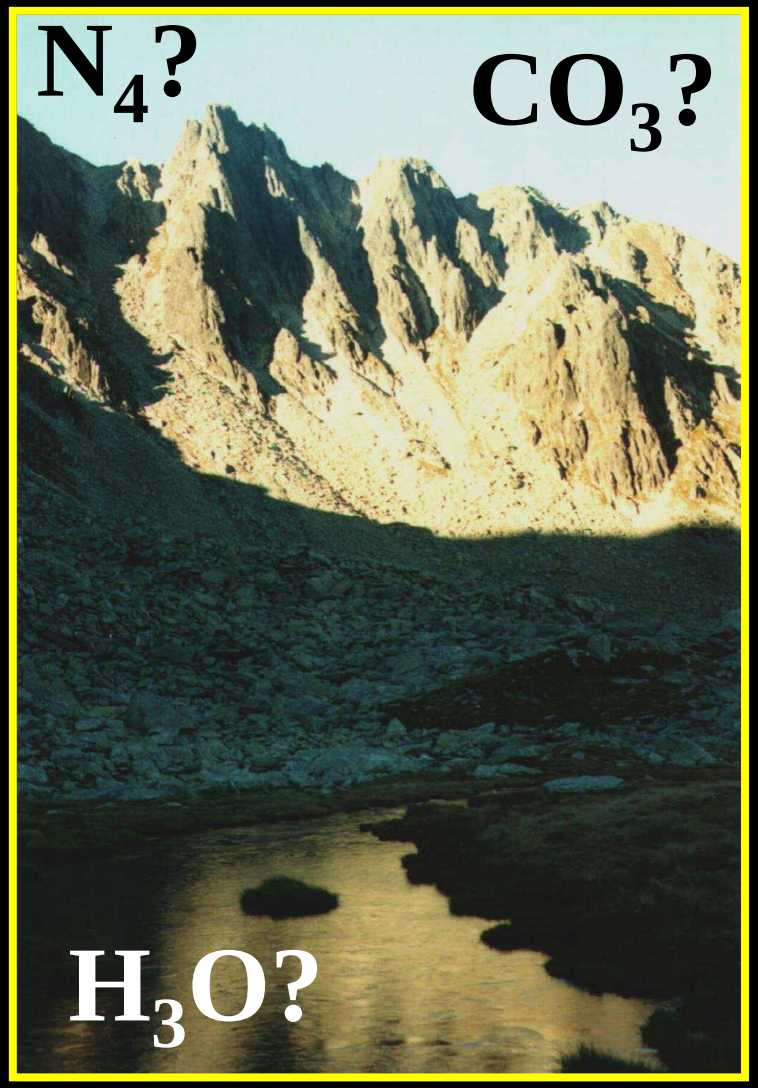
MATERIALS

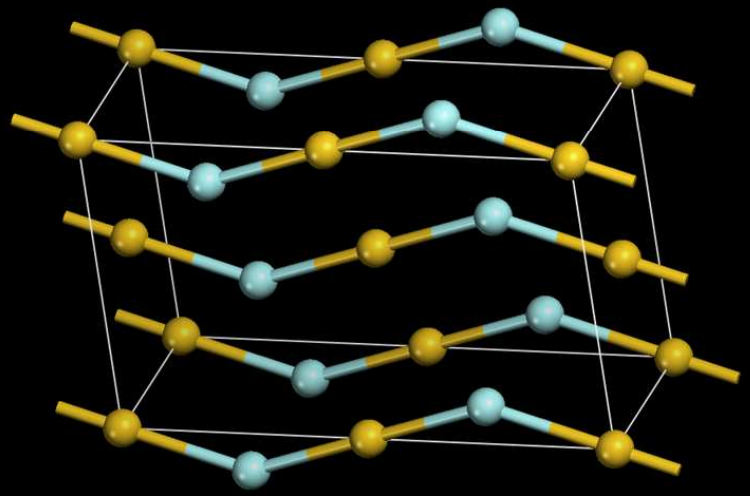
3. Unusual Compositions

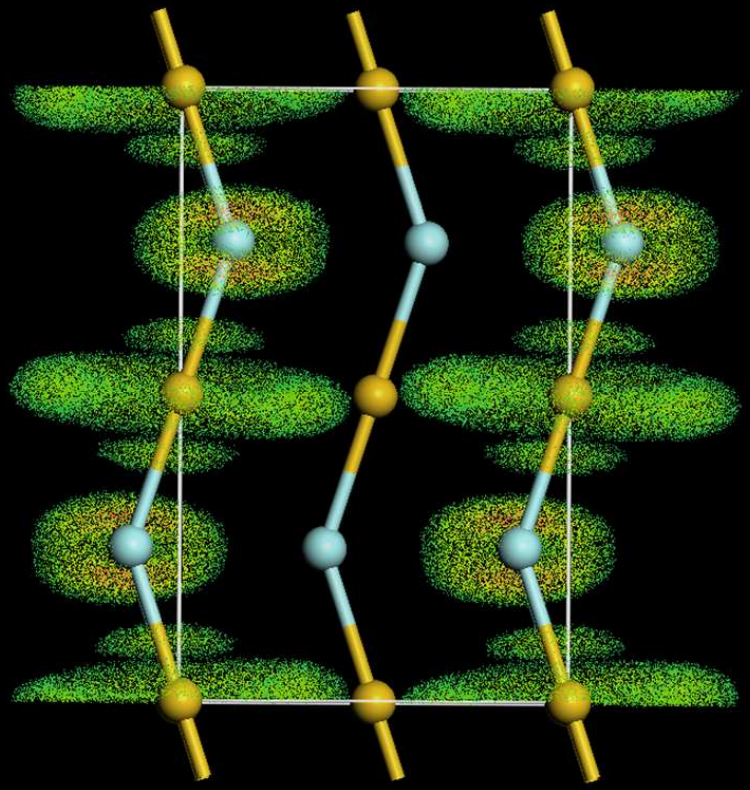


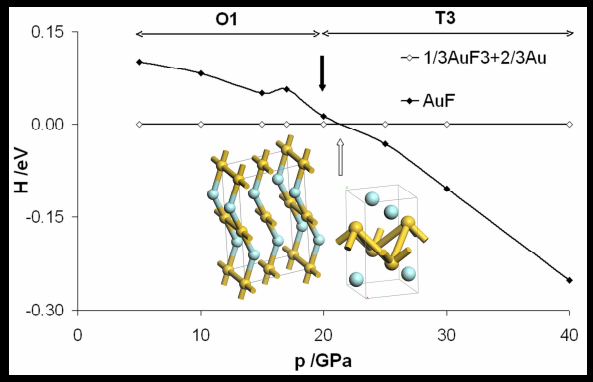
***Most pairs* of elements may bind…**
***Not all compositions* are easy to get…**

$2\ Au + AuF_3 \rightarrow 3\ AuF$

p=22 GPa







CHEM COMMUN: in press 2008

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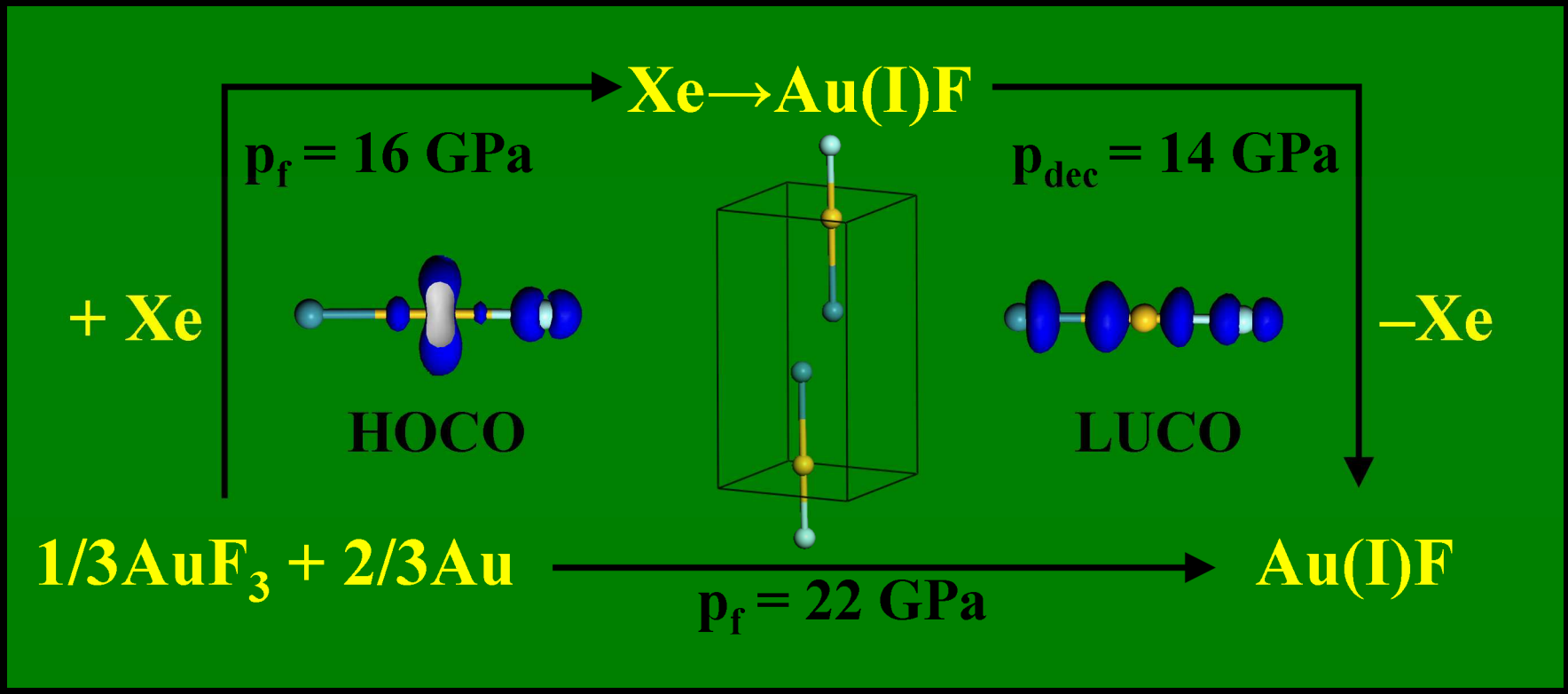

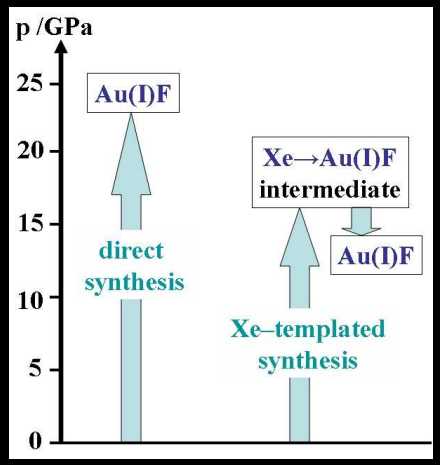

in press, Z ANORG ALLG CHEM 2008
dedicated to Konrad Seppelt (Freie.U.Berlin)

PHENOMENA

High–Pressure Phenomena

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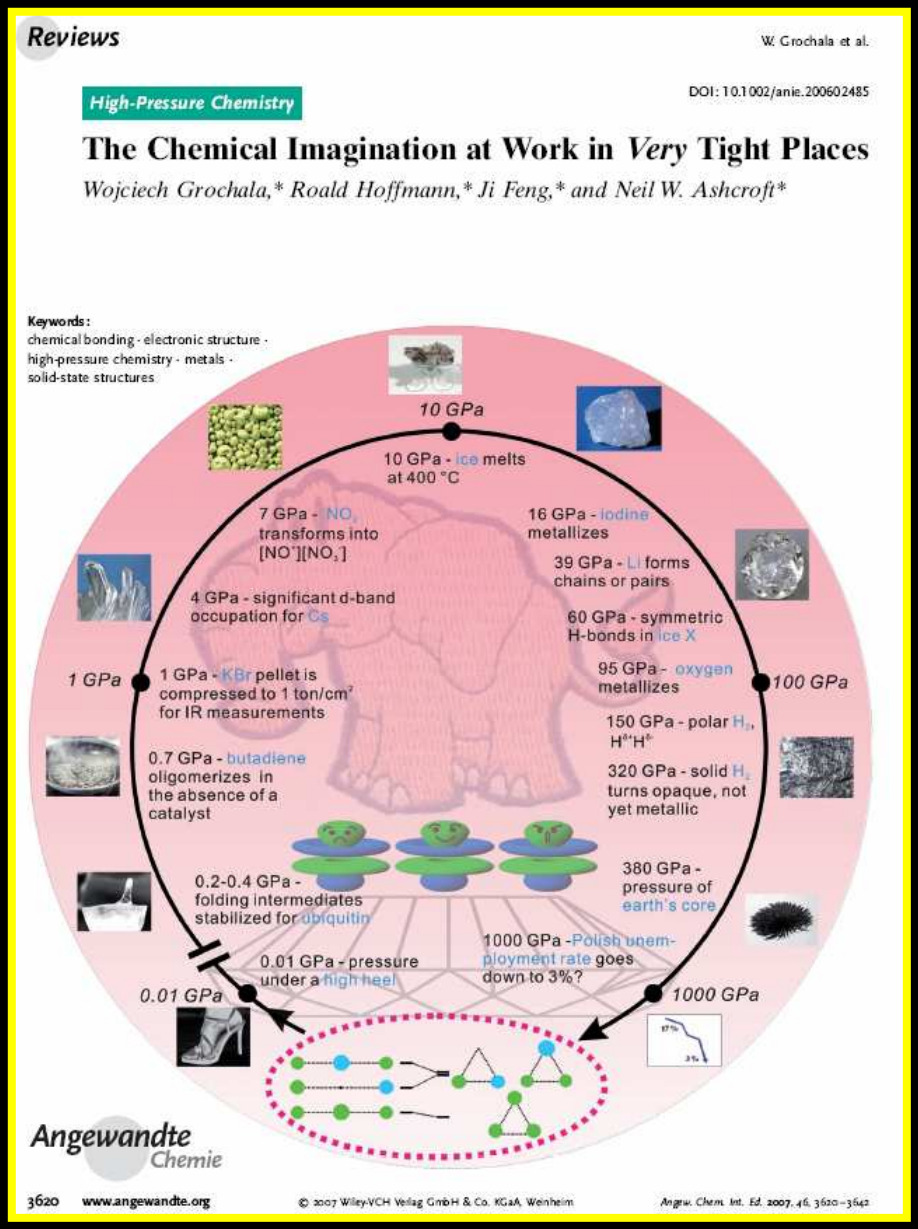
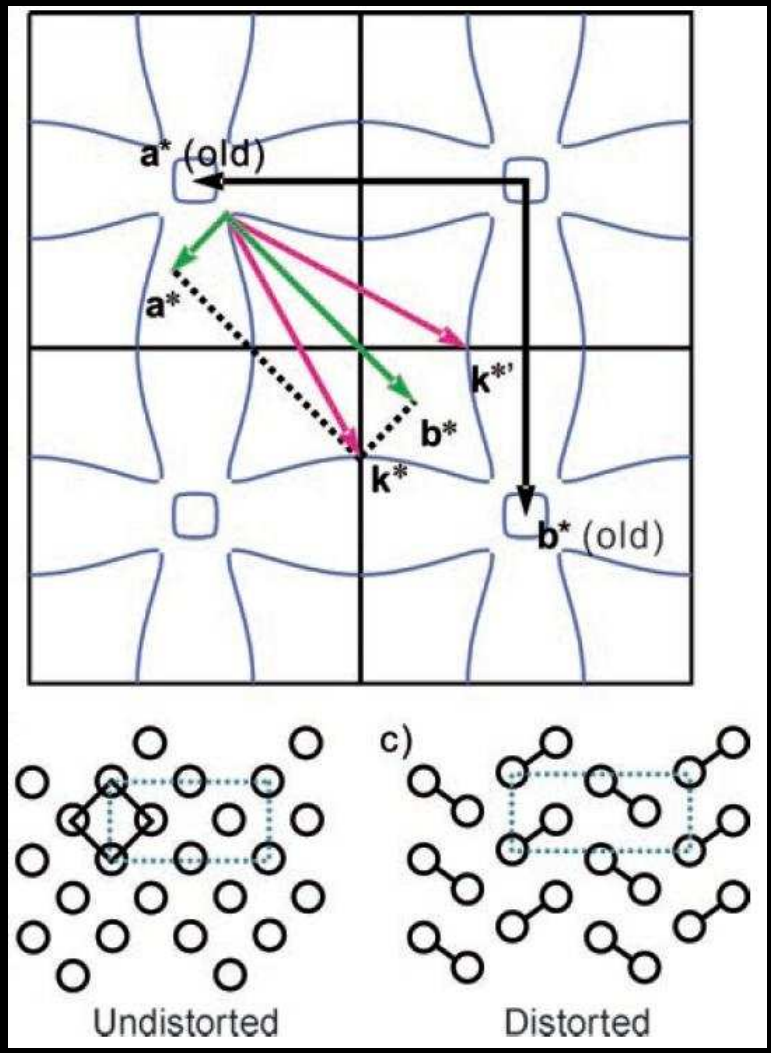
The *pV* world…

***3.5 mln atm* (static) exceeded…**





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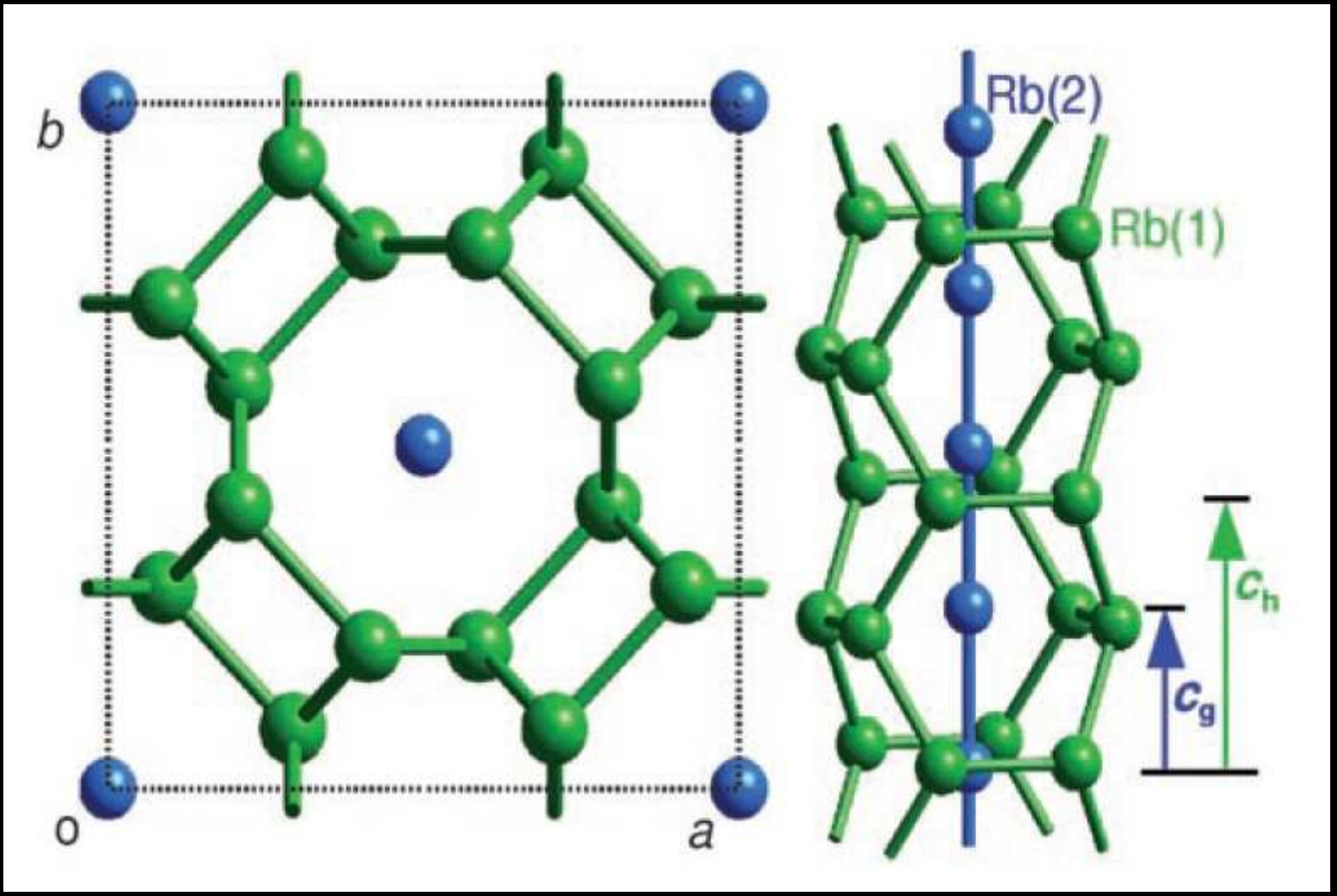

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Perfect…

Null…

Infinite…

Symmetric…

Immeasurable…

Incommensurate…

Continuum…

ACKNOWLEDGEMENTS

The Group

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D.Kurzydłowski
Ł.Maj
J. Romiszewski

Invitation

Organizers

$$$

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