prof. dr. E.W. Gorter

his contributions to structural chemistry in relation to physical properties

Jacob van Dijk (CHG)

Kees Plug (CHG)

CHG Chemie Historische Groep

Compliments by W.G.Burgers (1961)

TECHNISCHE HOGESCHOOL
LABORATORIUM VOOR
FYSISCHE CHEMIE
PROF. DR. W. G. BURGERS

DELFT, 17.4.1961
JULIANALAAN 136
TEL. 01730-24950*

Waarde Gorter.

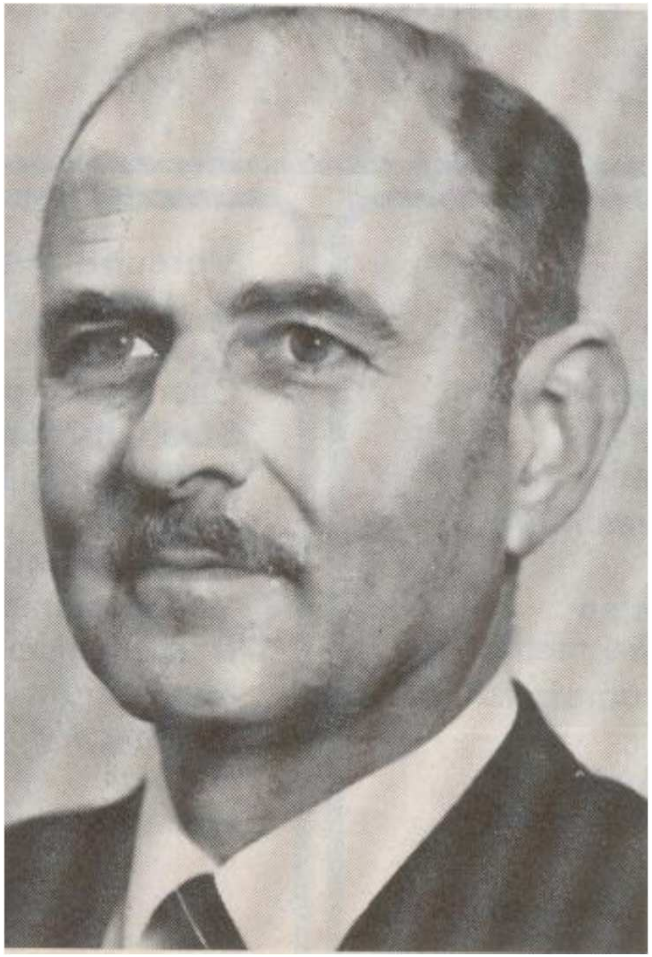
Hierbij retourneer ik de separaat van je artikel over "Some Structural Relationships of Ternary Metal Oxides", en ik kan niet nalaten je te complimenteren met de elegante methode die je daarin hebt toegepast om structuurverwantschappen te doen uitkomen. Ik moet bekennen, dat ik niet alles in detail heb gelezen, maar toch voldoende om de waarde hiervan goed te appreciëren. Ik ben benieuwd naar het in bewerking zijnde artikel over deze wijze van structuurvergelijking.

Met beste groeten

Je W.G. Burgers

Evert Willem Gorter

1912 (Leiden) -1972 (Leiden)



Gorter (left) with J. van Ormondt

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Ferrites

- Early history
  - Verwey was first to exploit this research line 1935
  - Van Arkel published article with Verwey as early as 1936
  - Snoek did write first booklet about ferrites 1947
- Why did ferrites receive so much attention?
  - availability cheap raw materials
  - electrical isolator
  - flexibility of composition & magnetic properties
  - novelty

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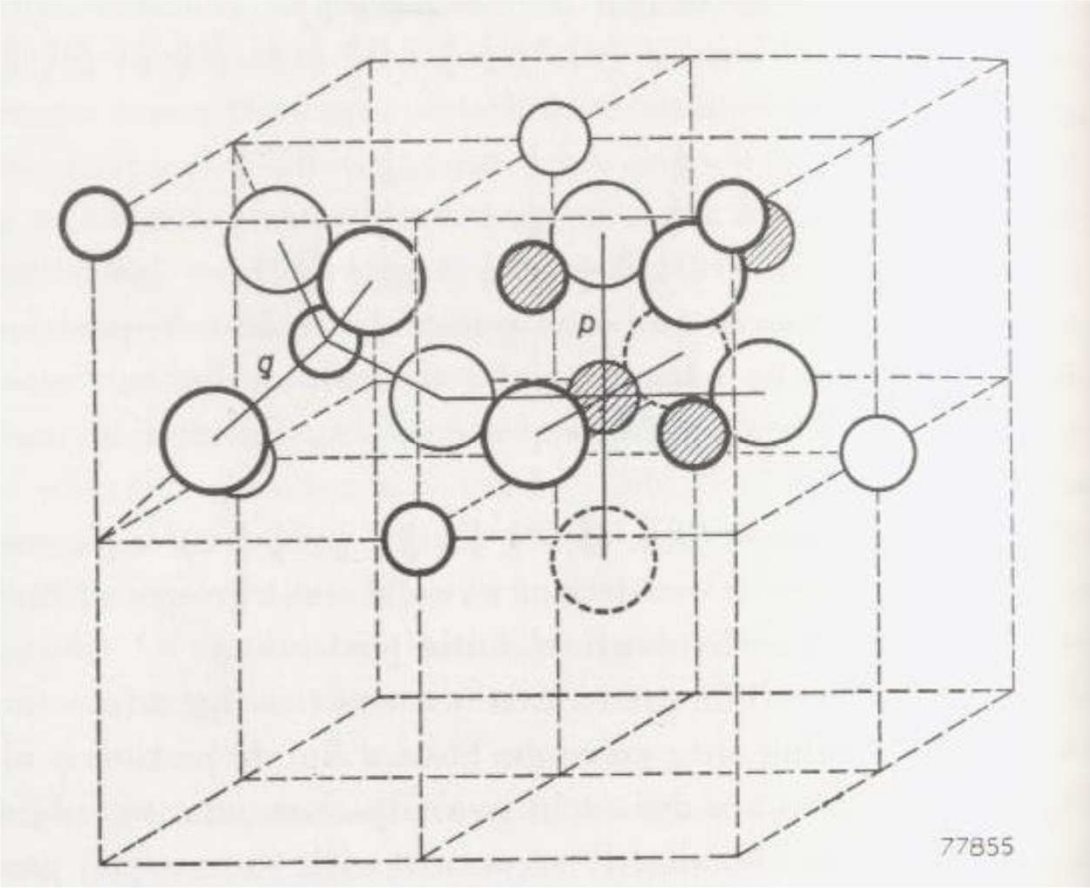
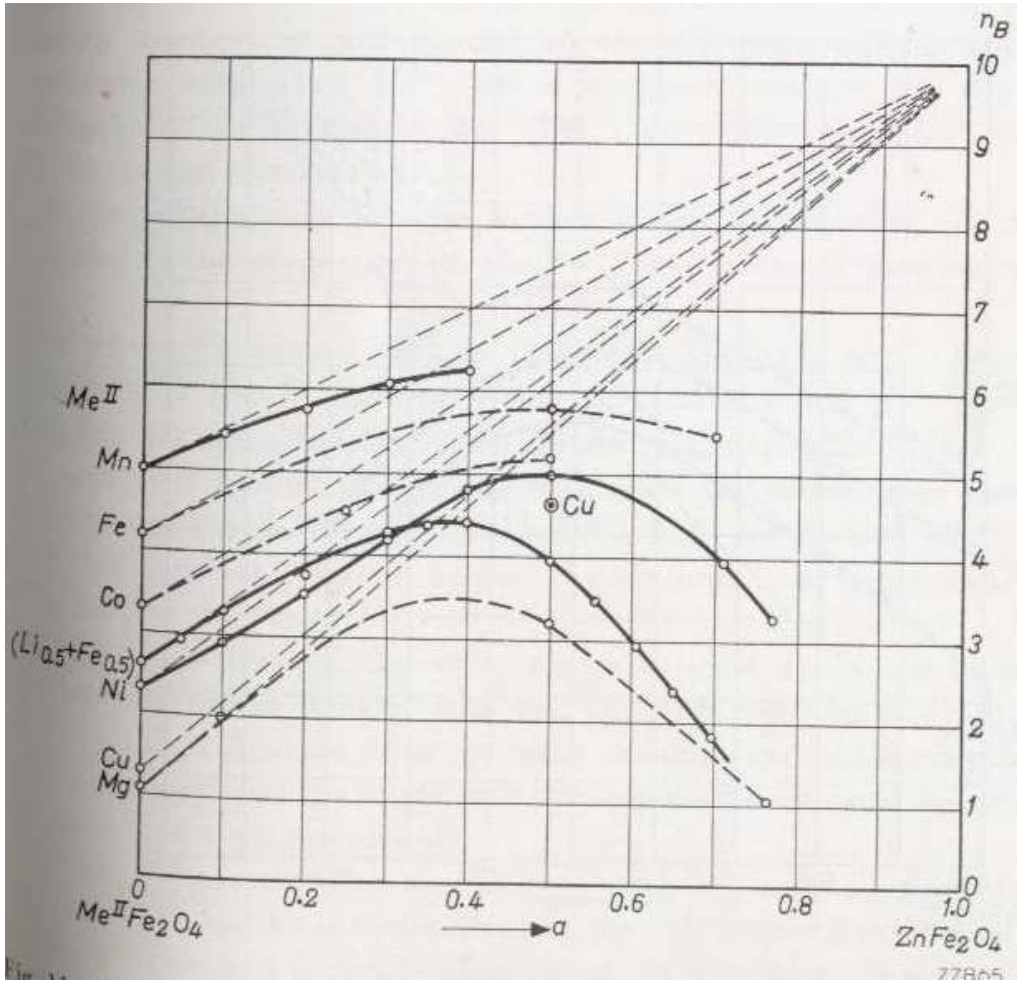
Spinel $Mg\,Al_2O_4$

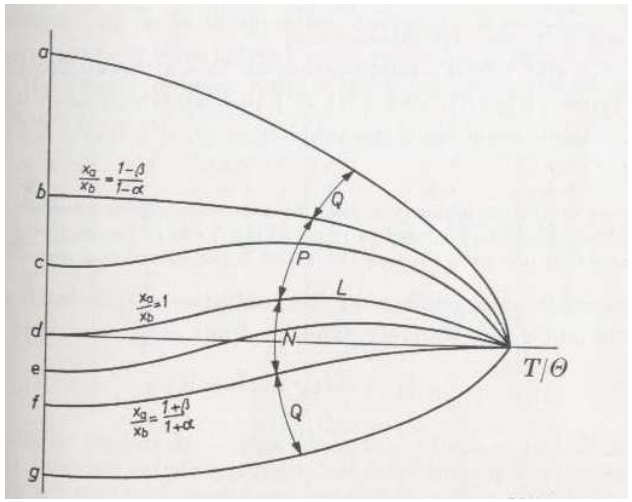


Dilution of $M(II)Fe_2O_4$ with Zn

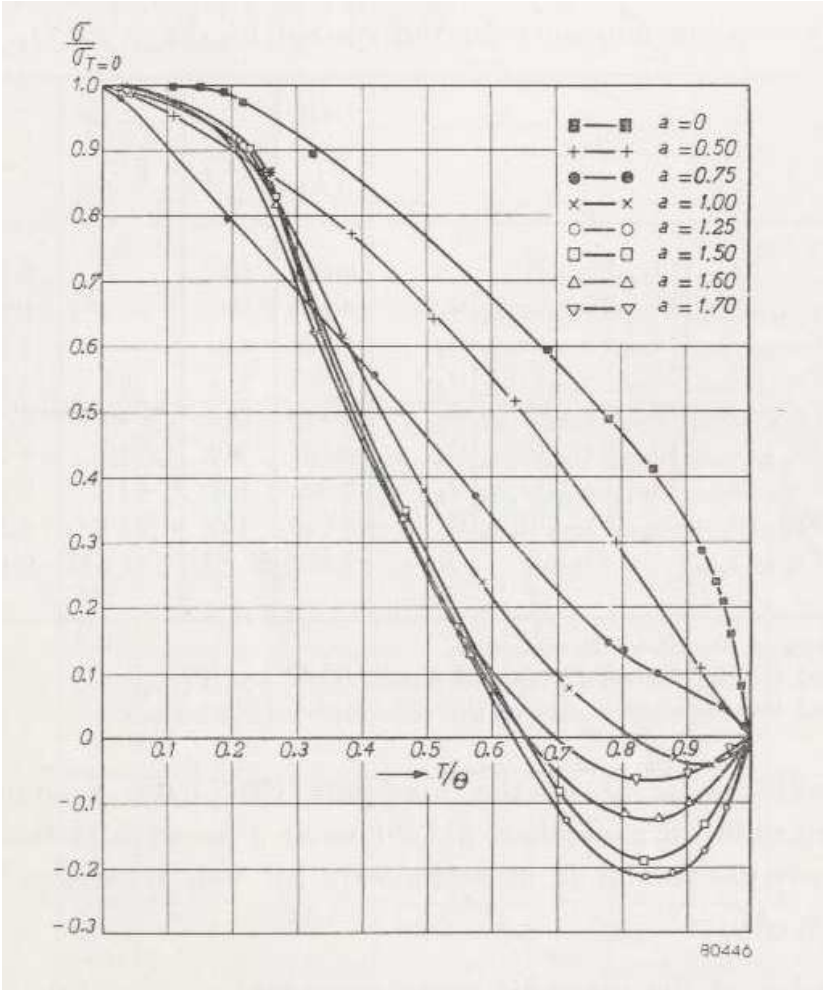


Predicted Néel anomaly

$Li_{0,5}Fe_{2,5-a}Cr_aO_4$

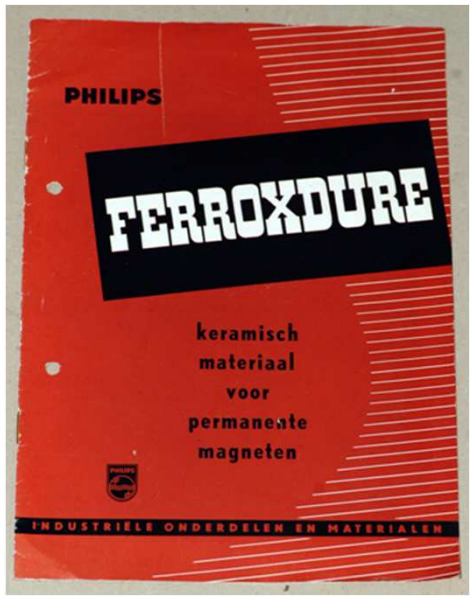


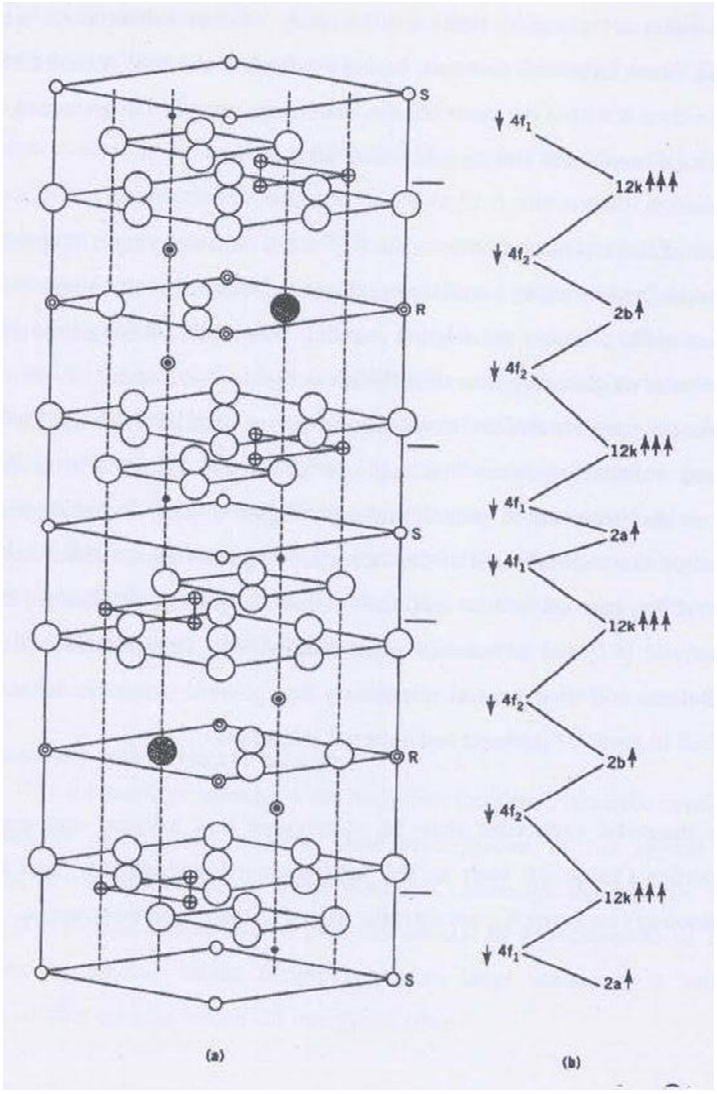
Néel theory



Super-exchange “model Gorter”

Spin ordering $BaFe_{12}O_{19}$





Letter E.W.Gorter

to Ramsey Memorial Fellowship Trust d.d. 25 August 1954

The more applied part of my work has resulted in 14 patent applications in the fields of magnetically weak and hard magnetic oxides and recording tape materials.

Although I can boast no "major achievements", I thought you might be interested to know how I have spent my time during the last eight years.

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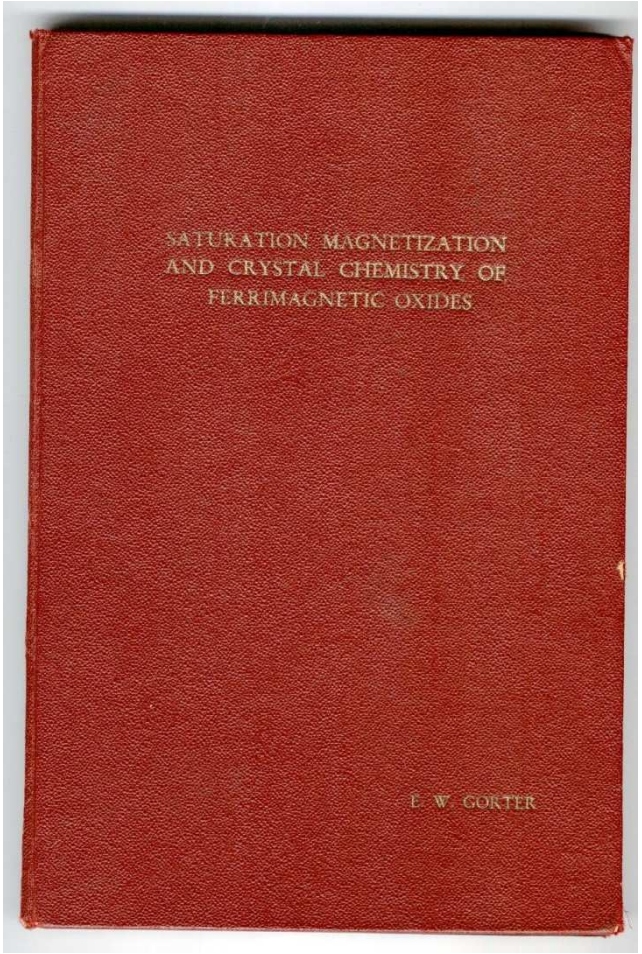
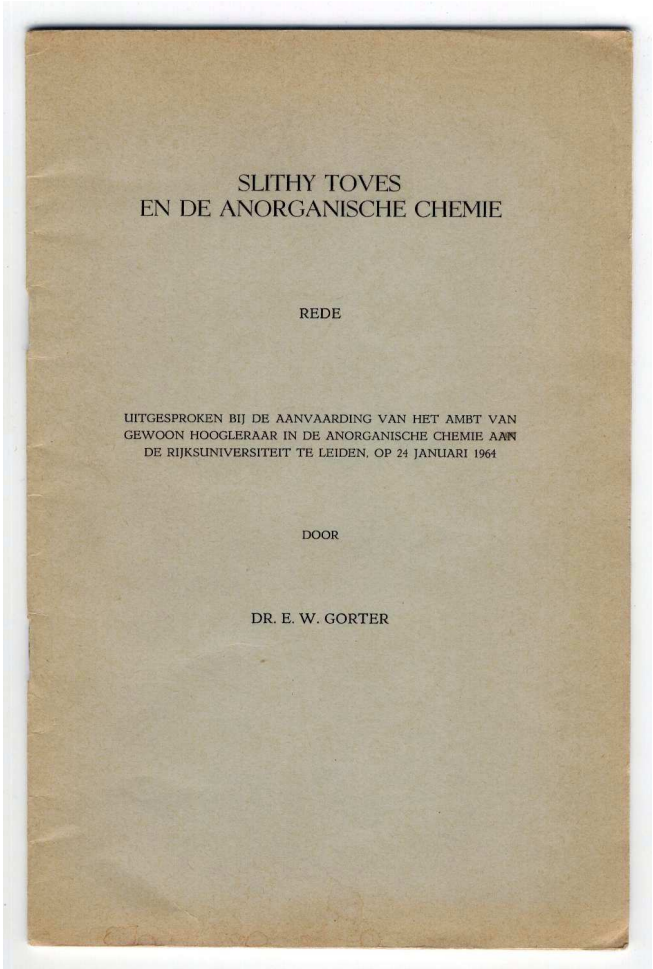
Gorter: Thesis and Inaugural Address





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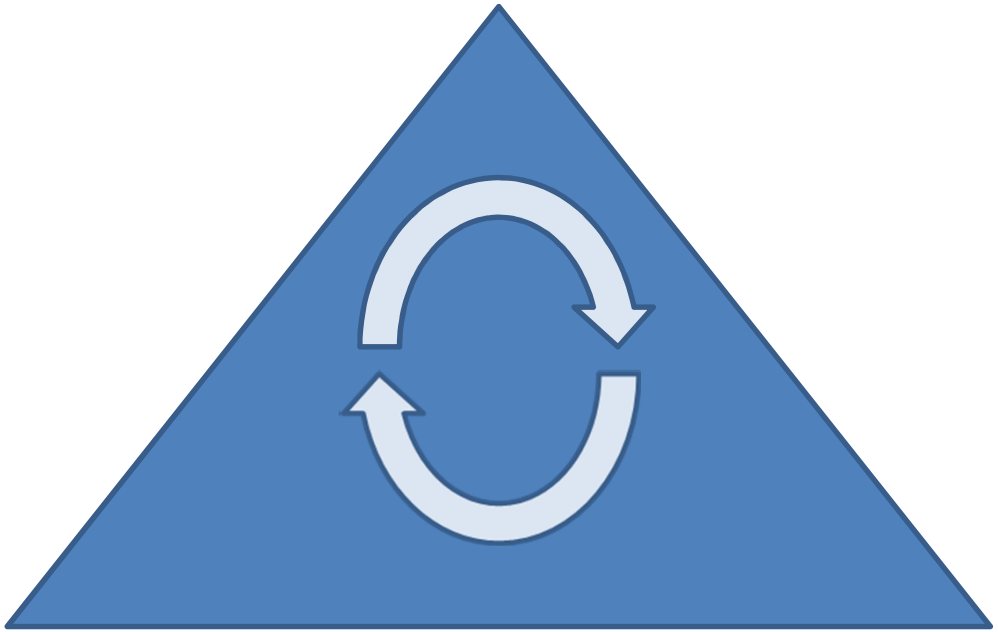
Gorter's approach



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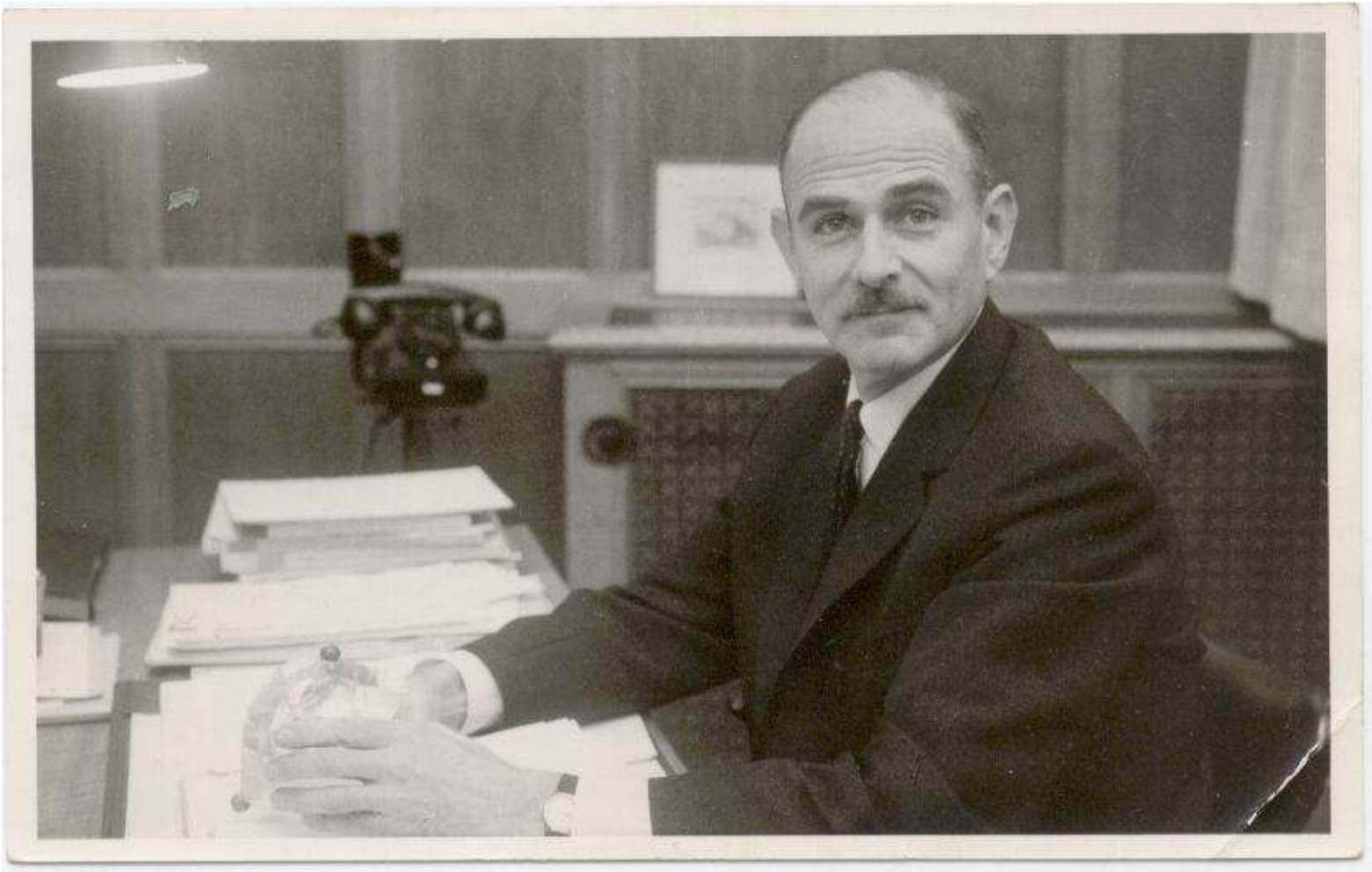
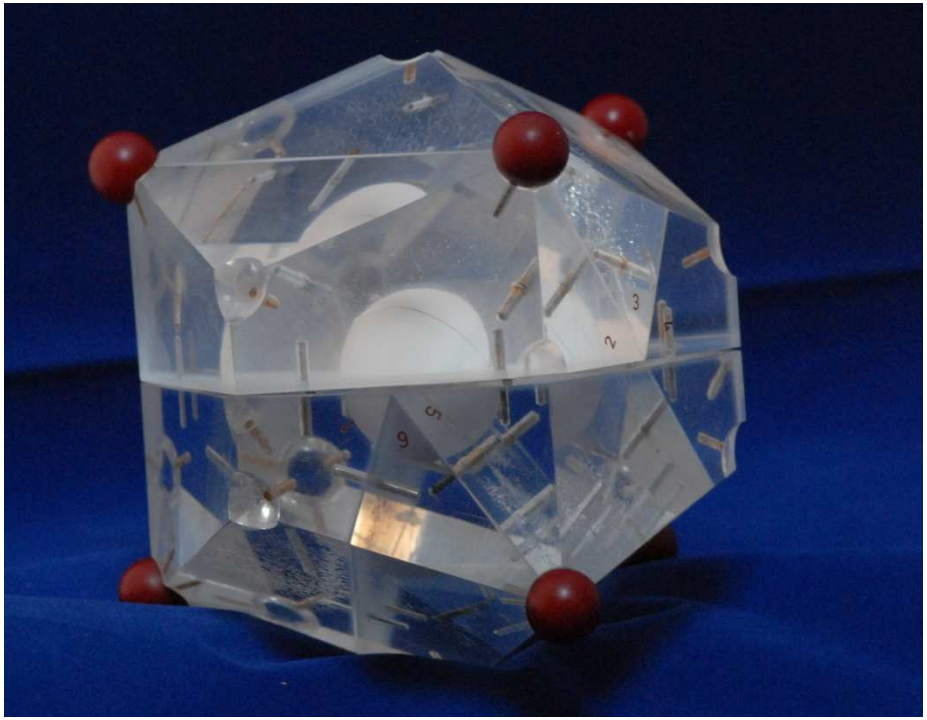
Gorter with his “blokje”



Gorter blokje



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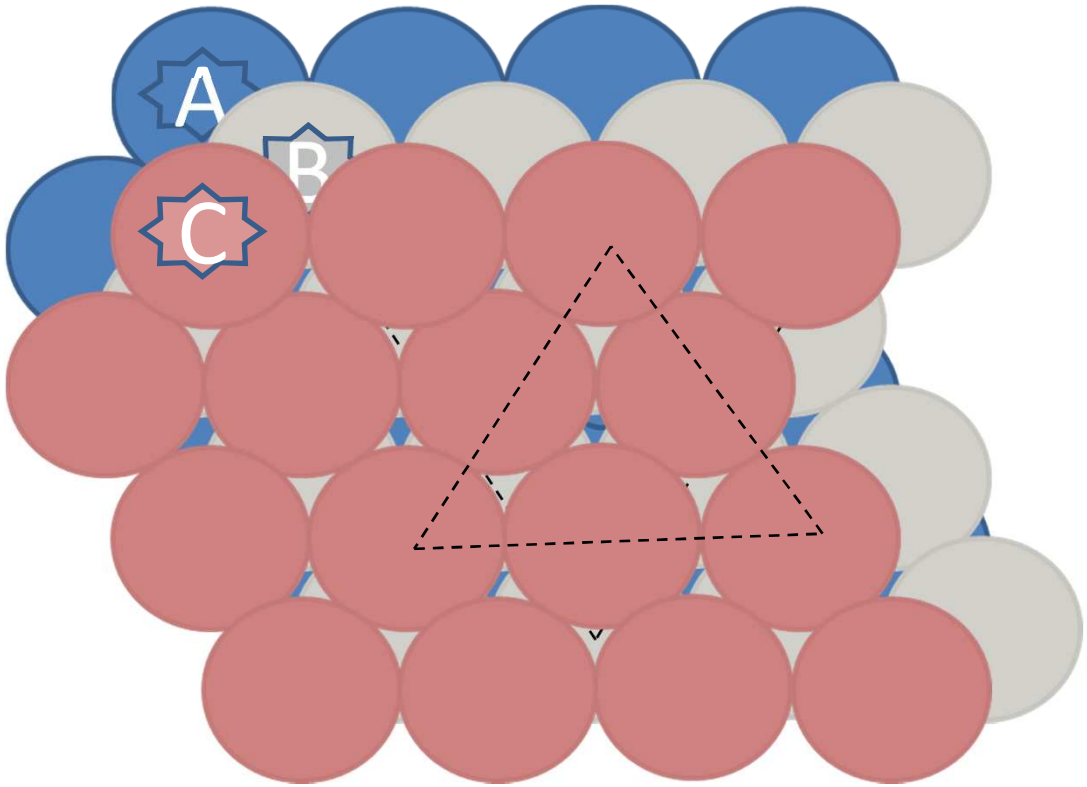
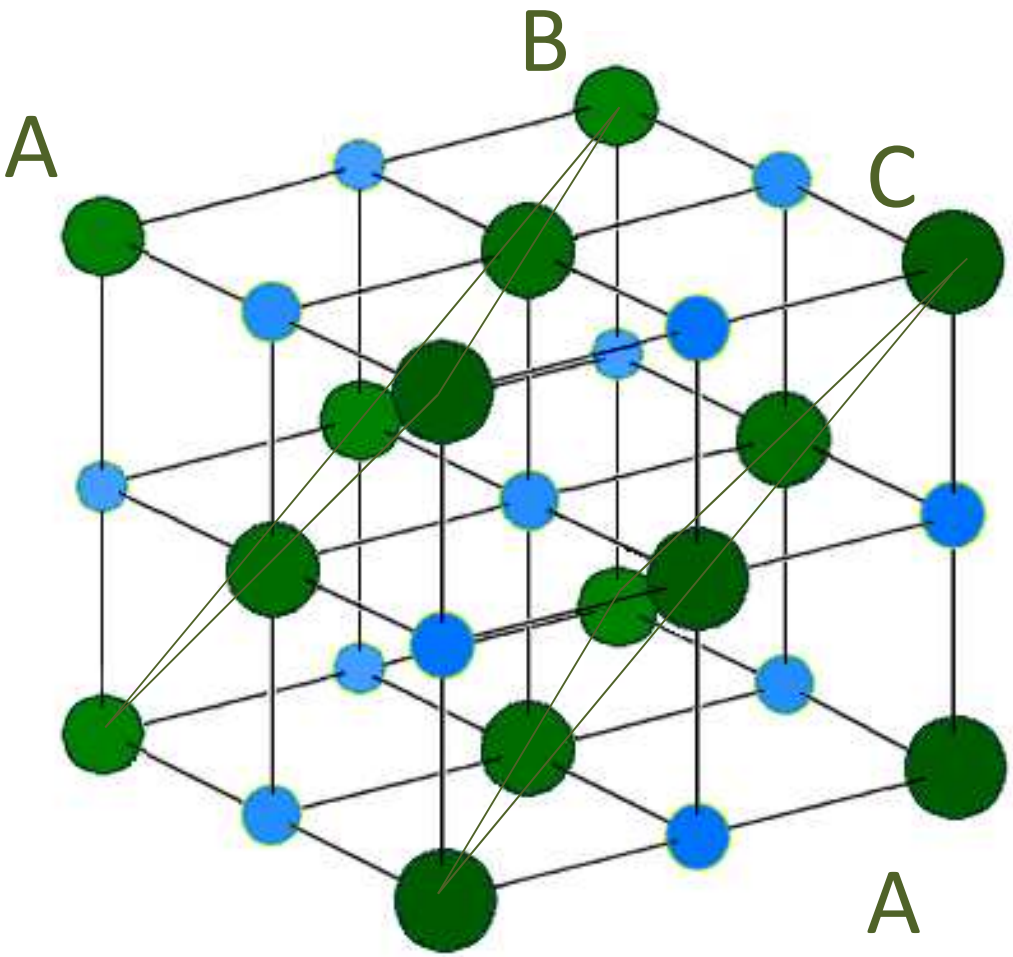
Close packed layers A B C



CCP = Cubic Close Packed

FCC = Face Centered Cubic



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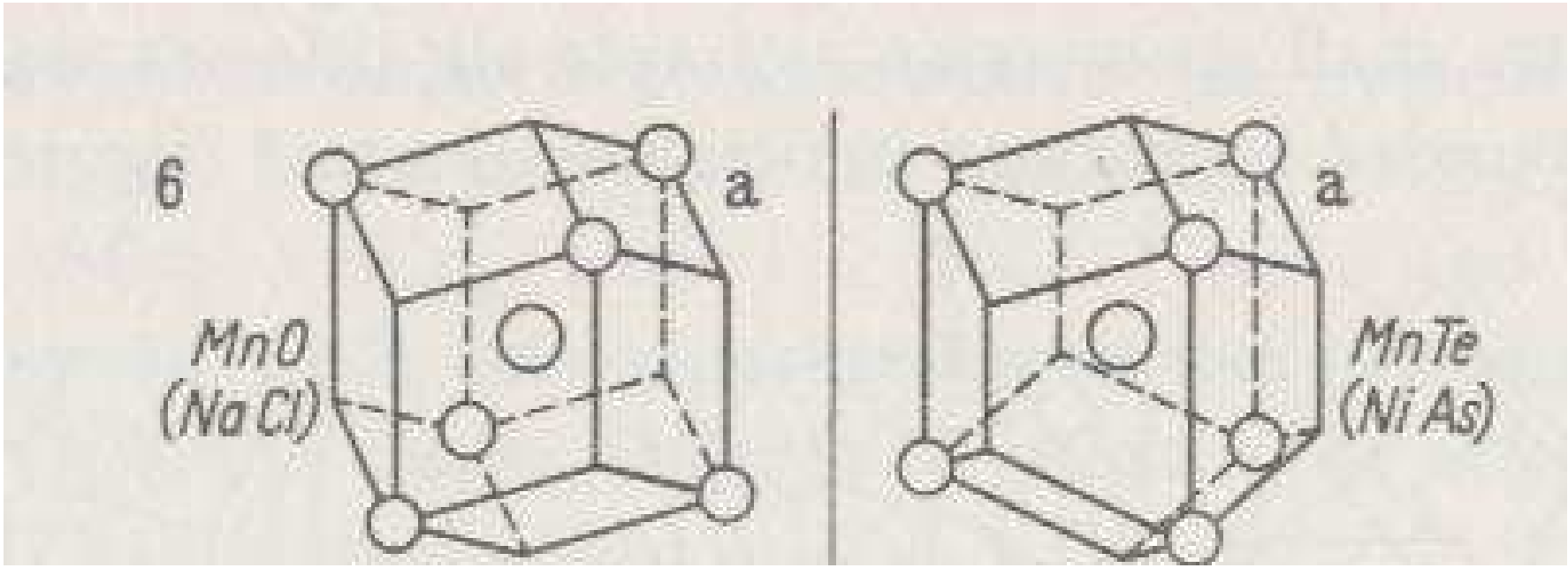
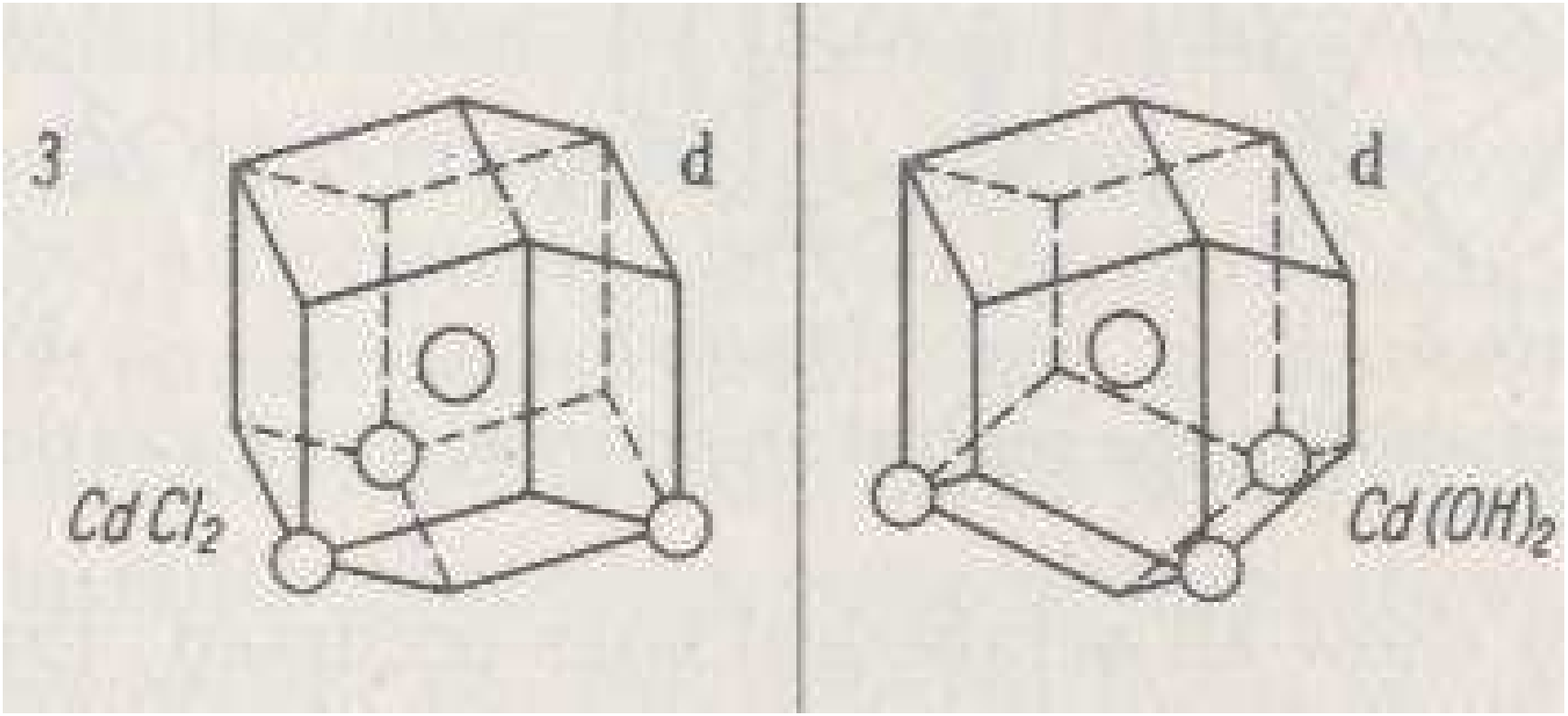
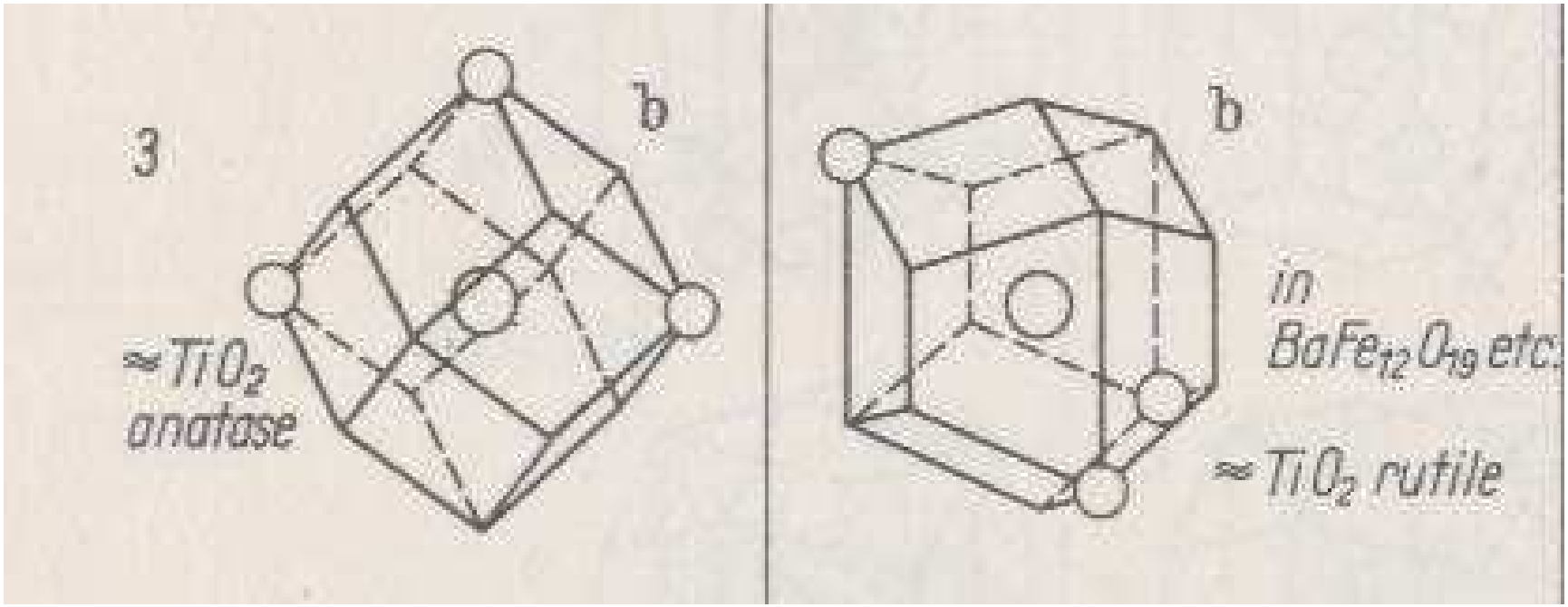
Gorter blokje of NaCl + NiAs



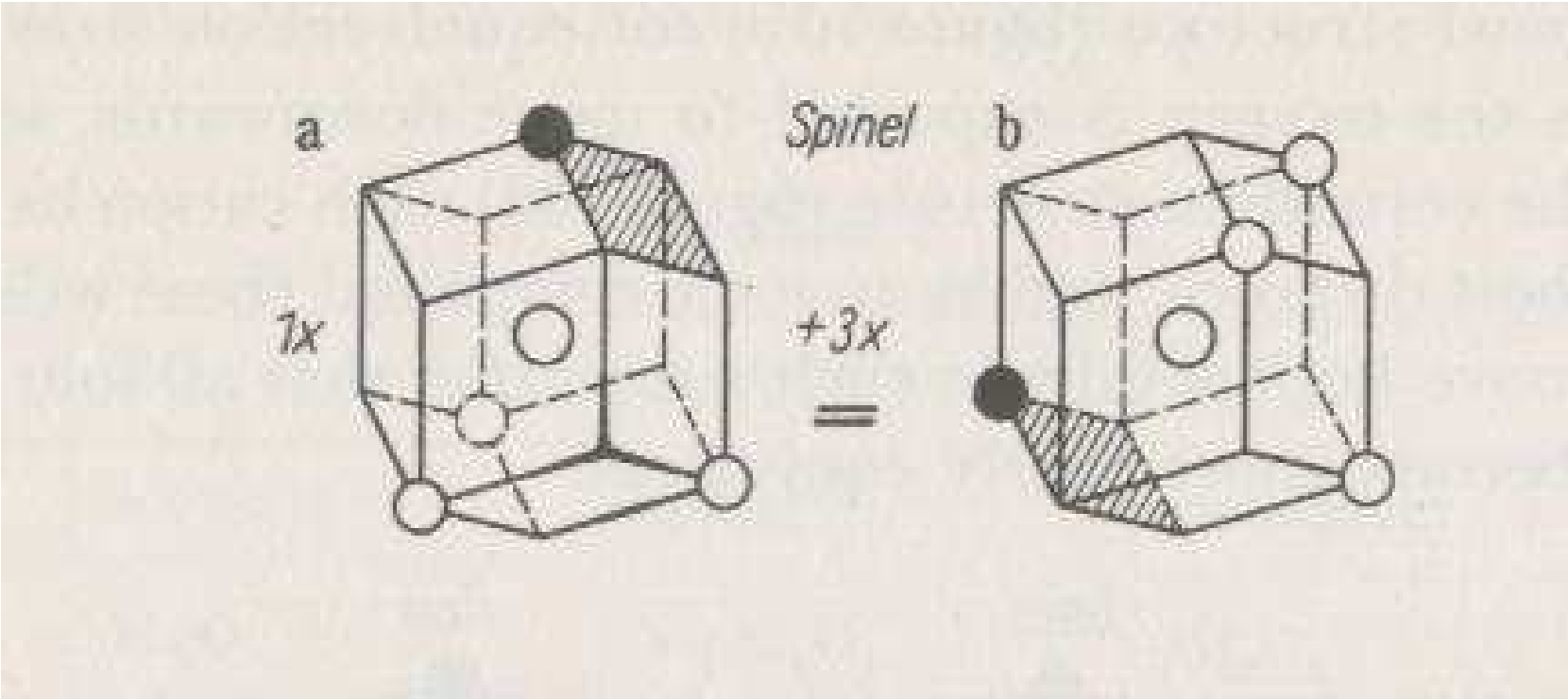
Gorter blokje of $CdCl_2$ + $Cd(OH)_2$



Gorter blokje of TiO2 Rutile + Anatase

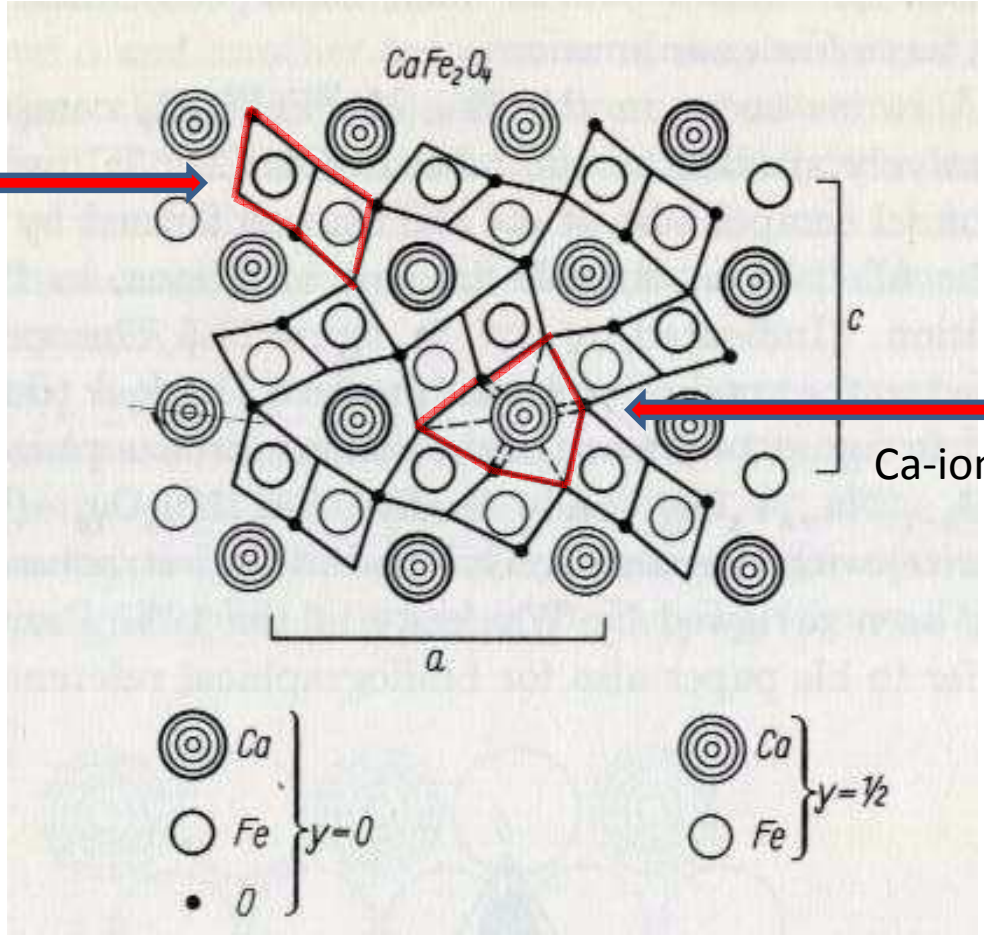


Gorter blokje of spinel



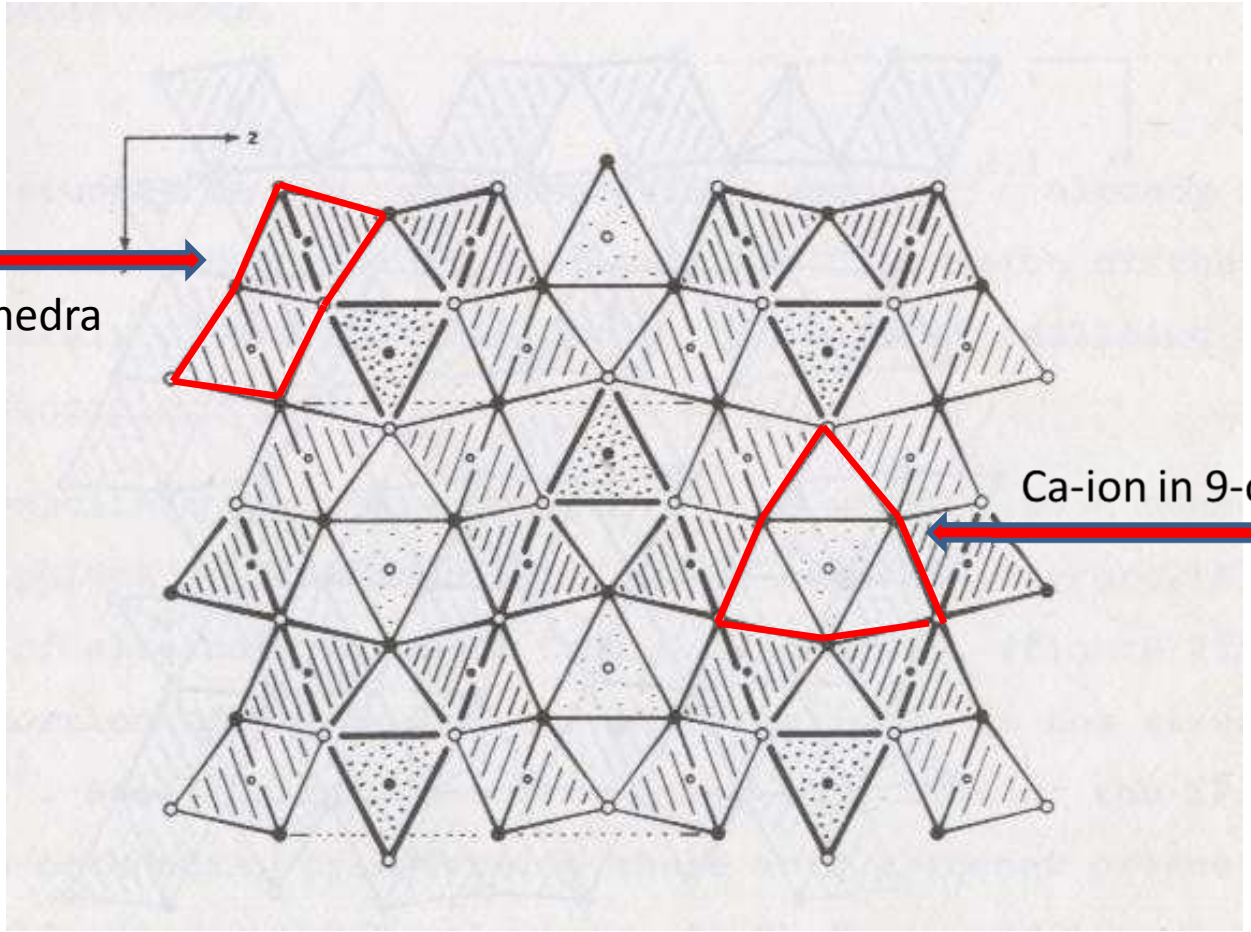
Gorter's representation of $CaFe_2O_4$

Face shared octahedra



Ca-ion in 9-coordination

Hyde's representation of $CaTi_2O_4$



Conclusions

- Gorter was eminent scientist/group leader at Philips directly after the war
  - Ferroxcube / Ferroxdure
  - Confirmation Neel theory
  - Model for super exchange in hexagonal ferrites
- Gorter's time as professor at Leiden
  - Too short to form a real school
  - Unique way to represent, understand and inter-relate crystal structures
  - Methodology to predict crystal structures

We like to thank the following persons who helped us during the preparation

Family man:

- Eline Schepers (daughter)
- Freek Schepers (grandson)

Professor Leiden:

- Daan IJdo (co-worker)
- Guus Schippers (assistant)
- Jan Reedijk (em prof Leiden)

Philips employee:

- Frans Kools
- George Blasse
- Nol Broese van Groenou
- Coen Rooijmans

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