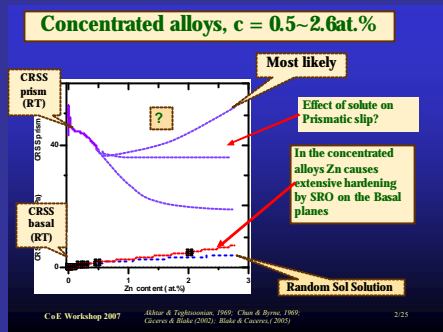
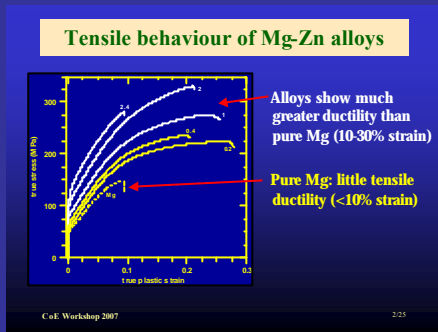


# Solid Solution Hardening and Softening in Mg-Zn Alloys

A. H. Blake, C.E. Mann, J.R. Griffiths, C. H. Cáceres

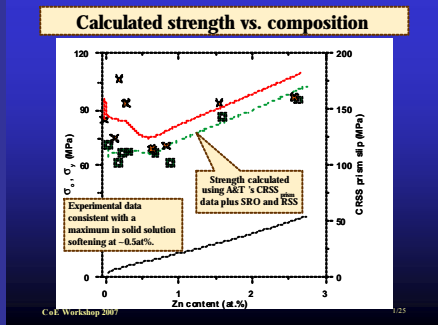
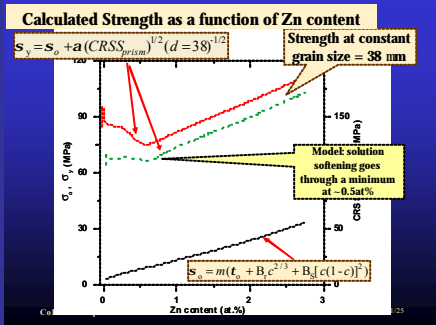
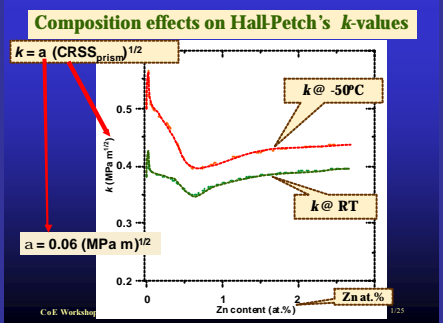
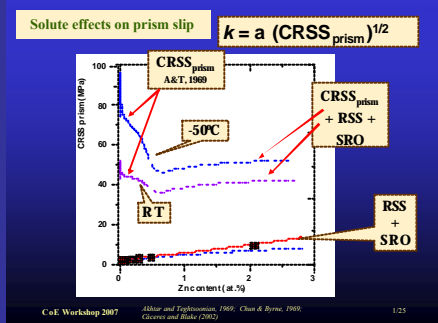
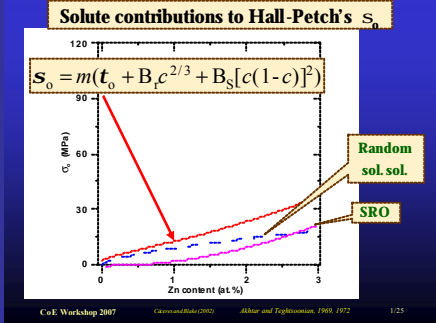
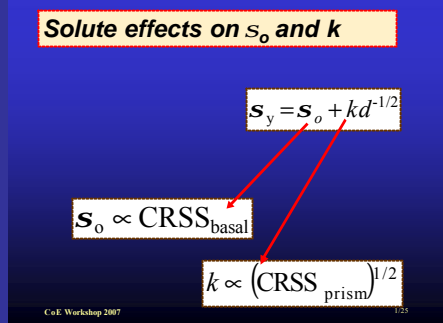
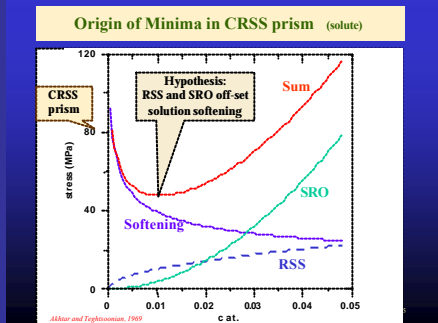
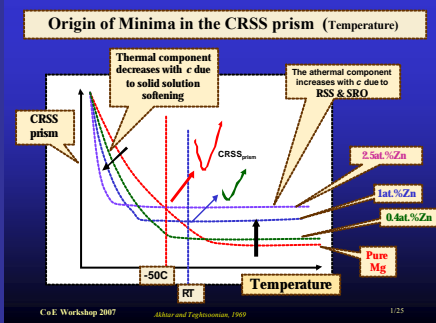
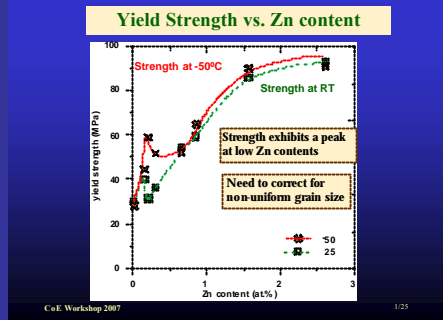
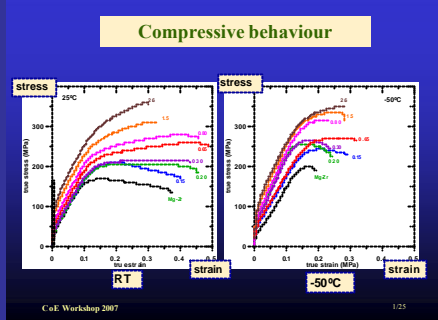
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## Alloys studied and grain size

	Zn (at.%)	Zr (at.%)	Grain size (µm)
Dilute alloys (SS)	0.00	0.05	316
	0.14	0.09	87
	0.19	0.04	201
	0.29	0.04	155
Concentrated alloys (SSSS)	0.64	0.06	61
	0.84	0.12	41
	1.56	0.14	38
	2.59	0.15	41

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## Conclusions

- The strength behaviour of polycrystalline Mg-Zn solid solutions at low and room temperature can be traced back to the temperature and solute effects on prismatic slip.
- Solid solution softening effects on the prism planes appear to go through a maximum at concentrations of the order of 0.5at.%Zn.
- Solute softening effects are offset by hardening due to short range order in the higher alloys.

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