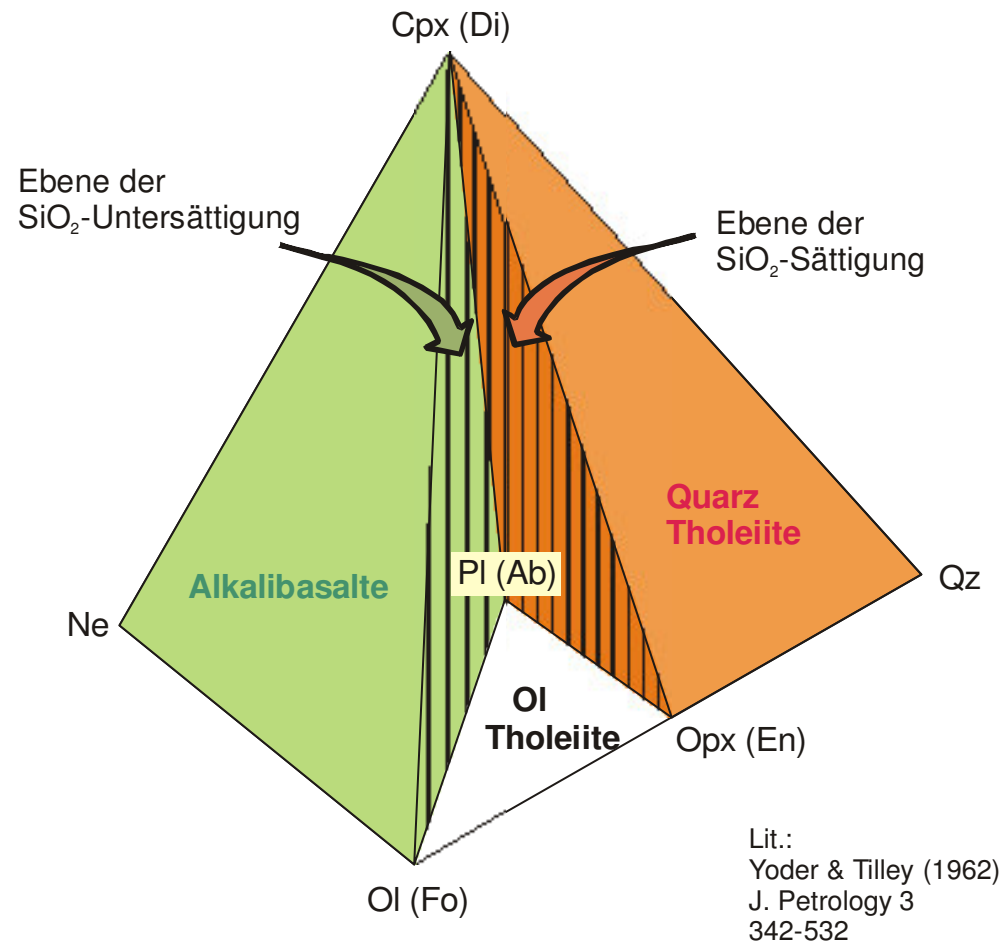


# Basalttetraeder

Basalt Tetraeder



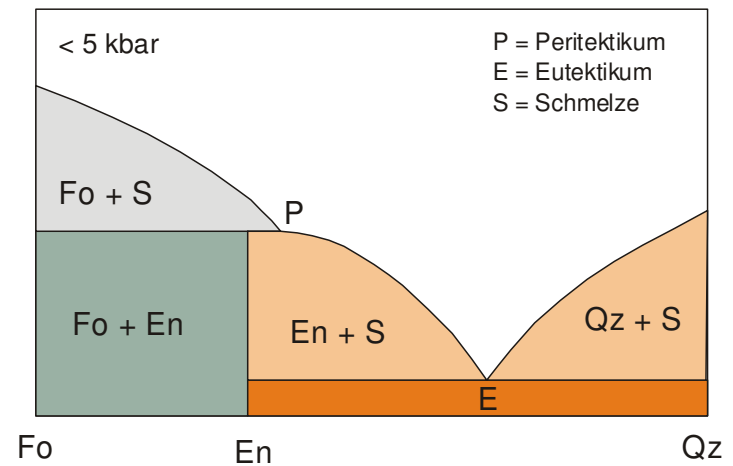
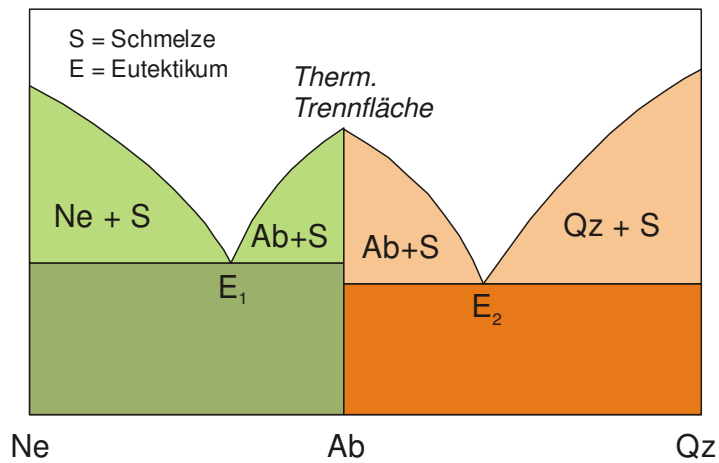
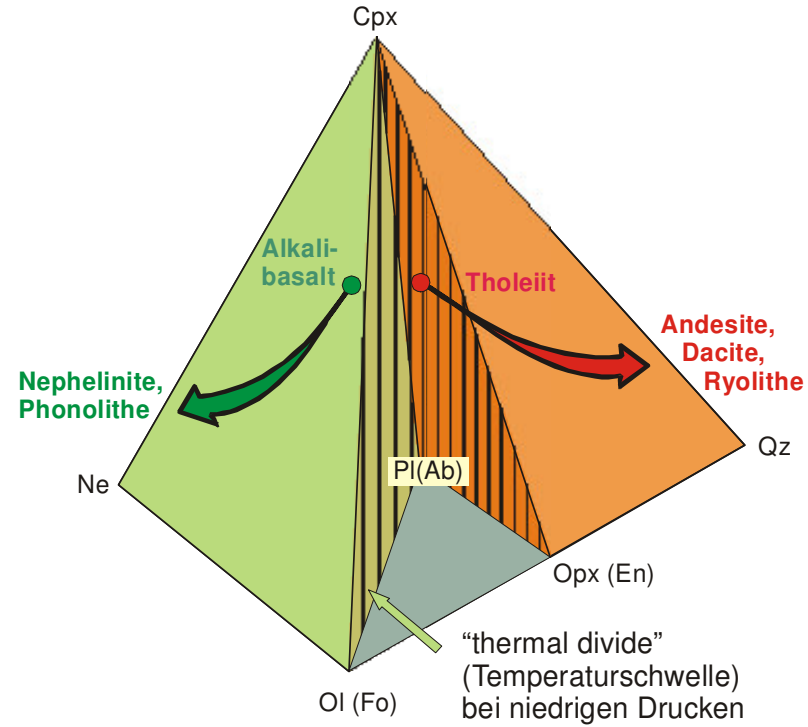
Alkalibasalte: Nephelin - Diopsid - Forsterit - Albit

Quarz Tholeiite: Diopsid - Enstatit - Albit - Quarz

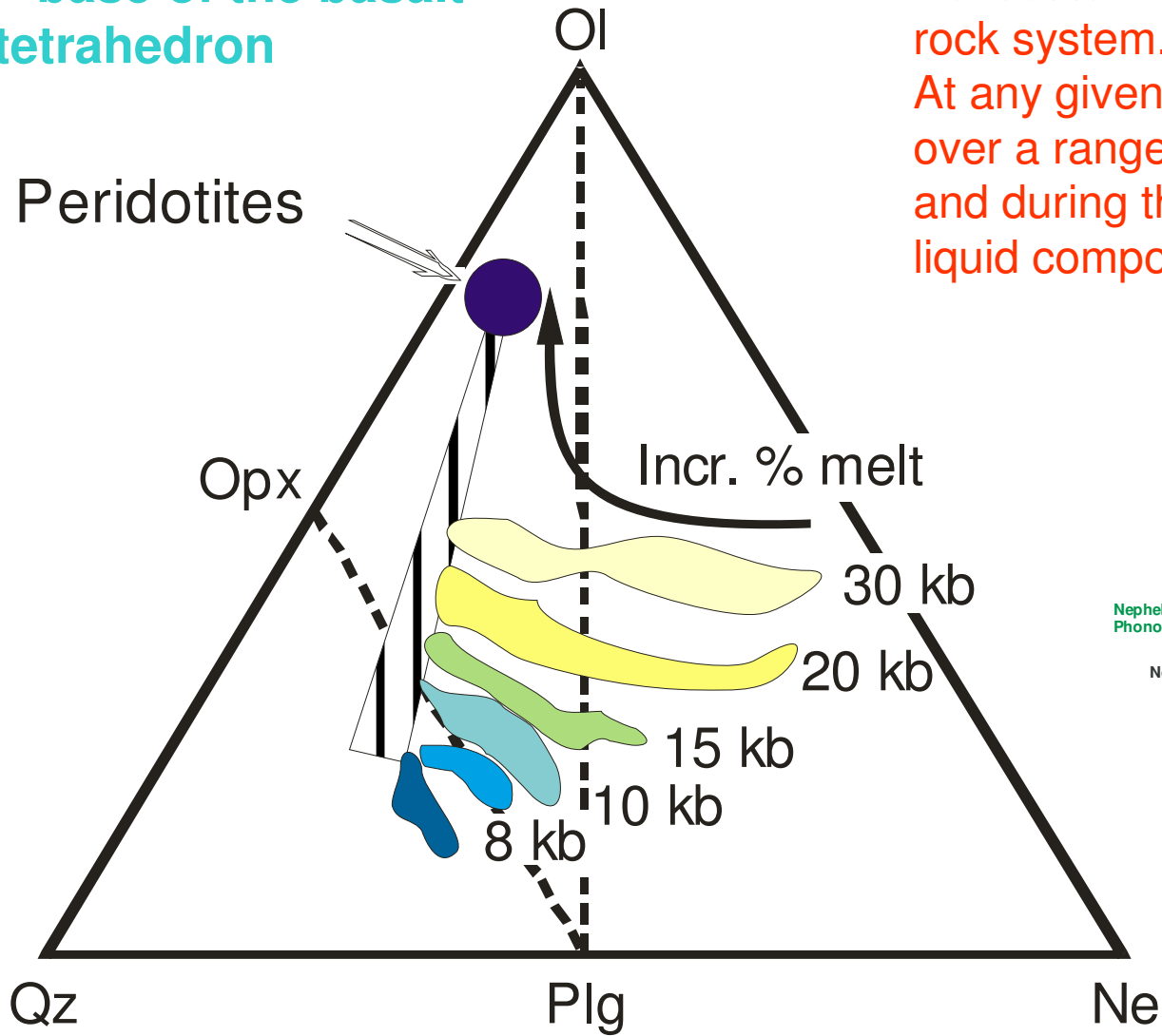
Olivin Tholeiite: Forsterit - Diopsid - Enstatit - Albit

# Basalt Tetraeder

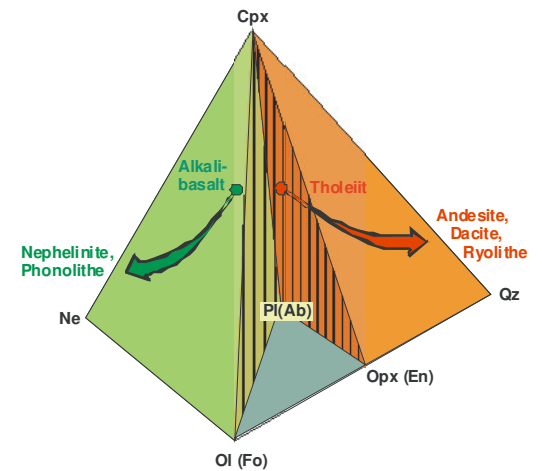
## Entstehung von getrennten Magmenreihen



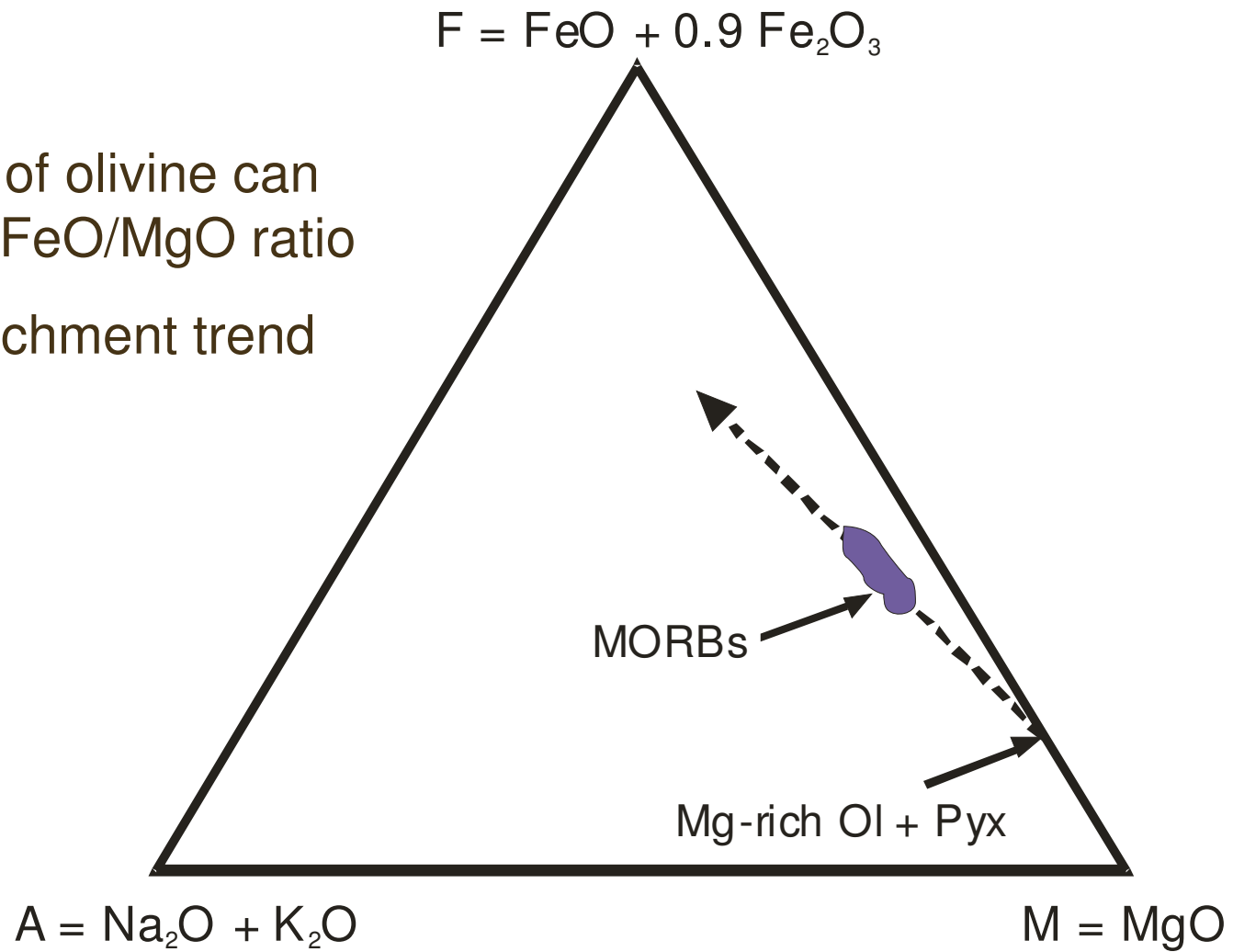
Qz-Ol-Ne projection  
 ≡ base of the basalt  
 tetrahedron

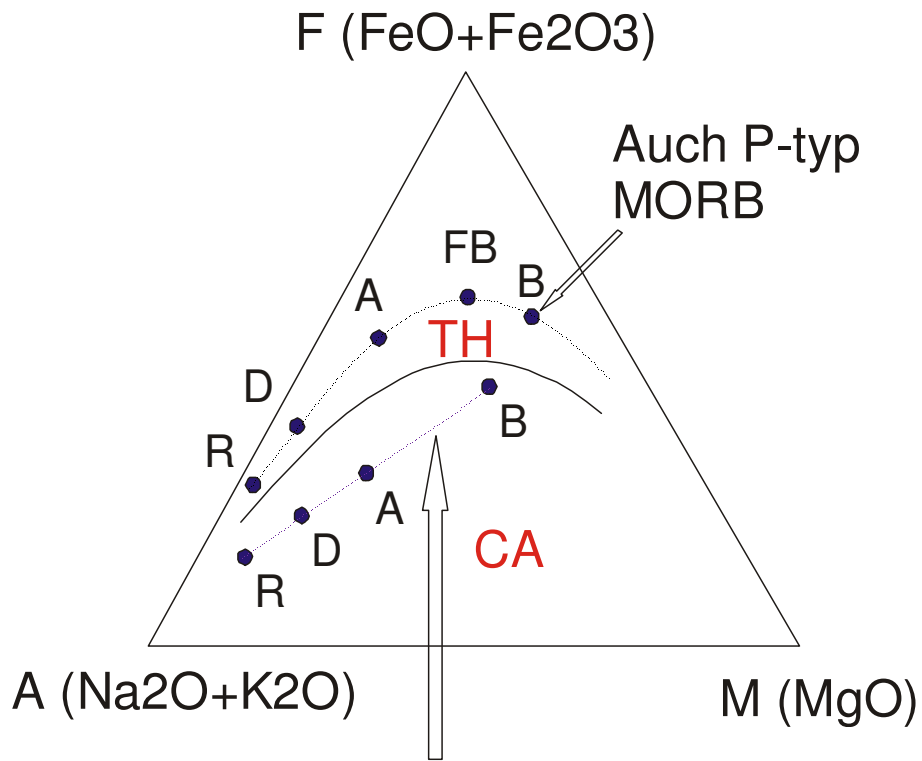


Peridotite = multicomponent  
 rock system.  
 At any given pressure it melts  
 over a range of temperatures  
 and during this melting the  
 liquid composition changes.



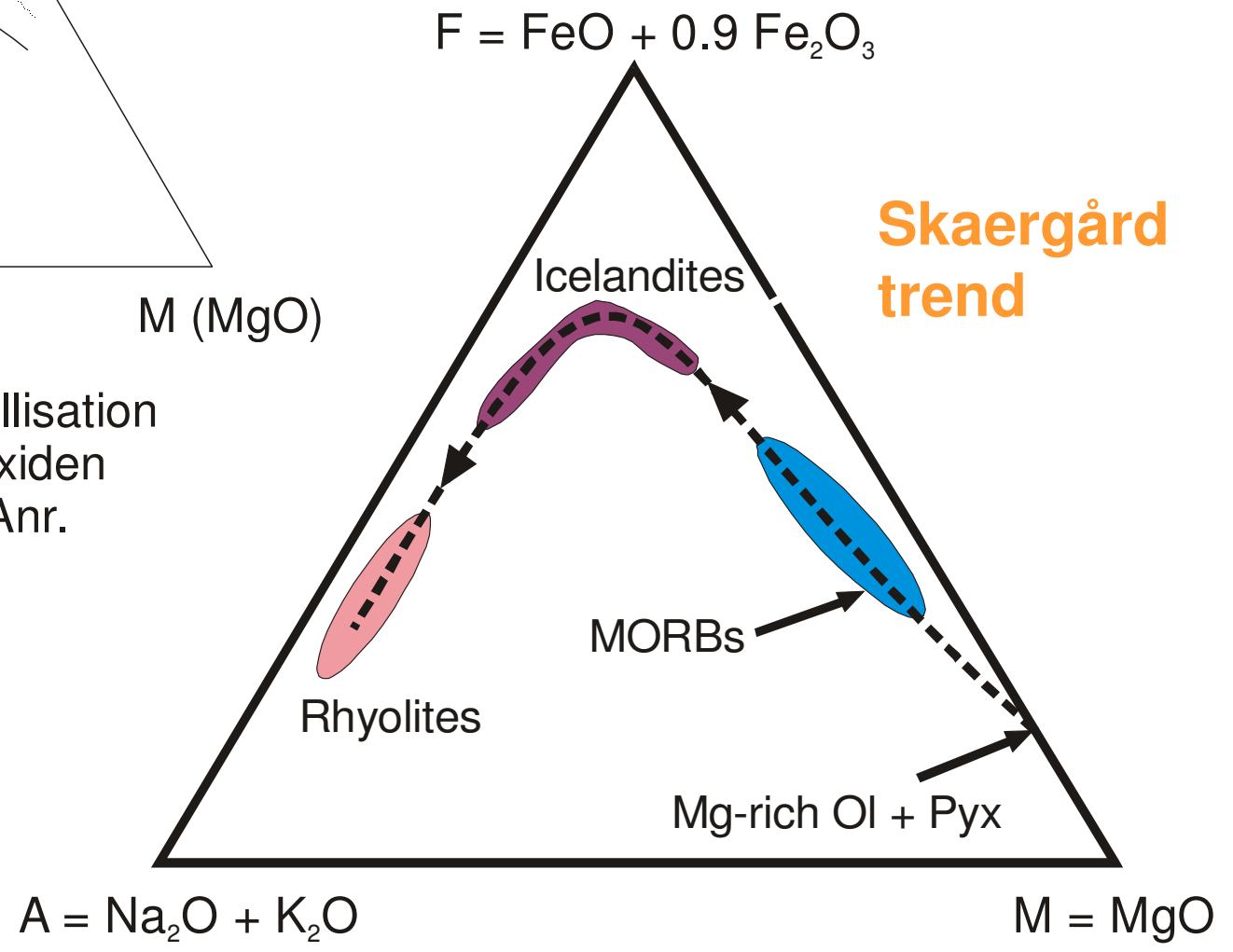
Removal of olivine can  
raise the FeO/MgO ratio  
→ Fe-enrichment trend

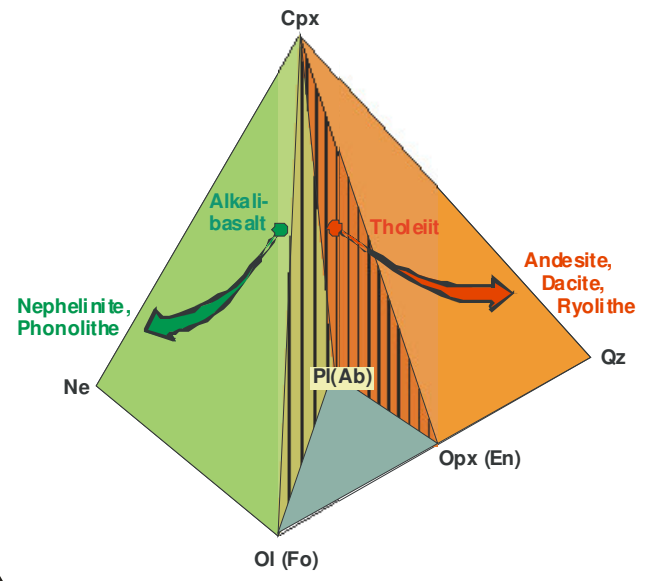
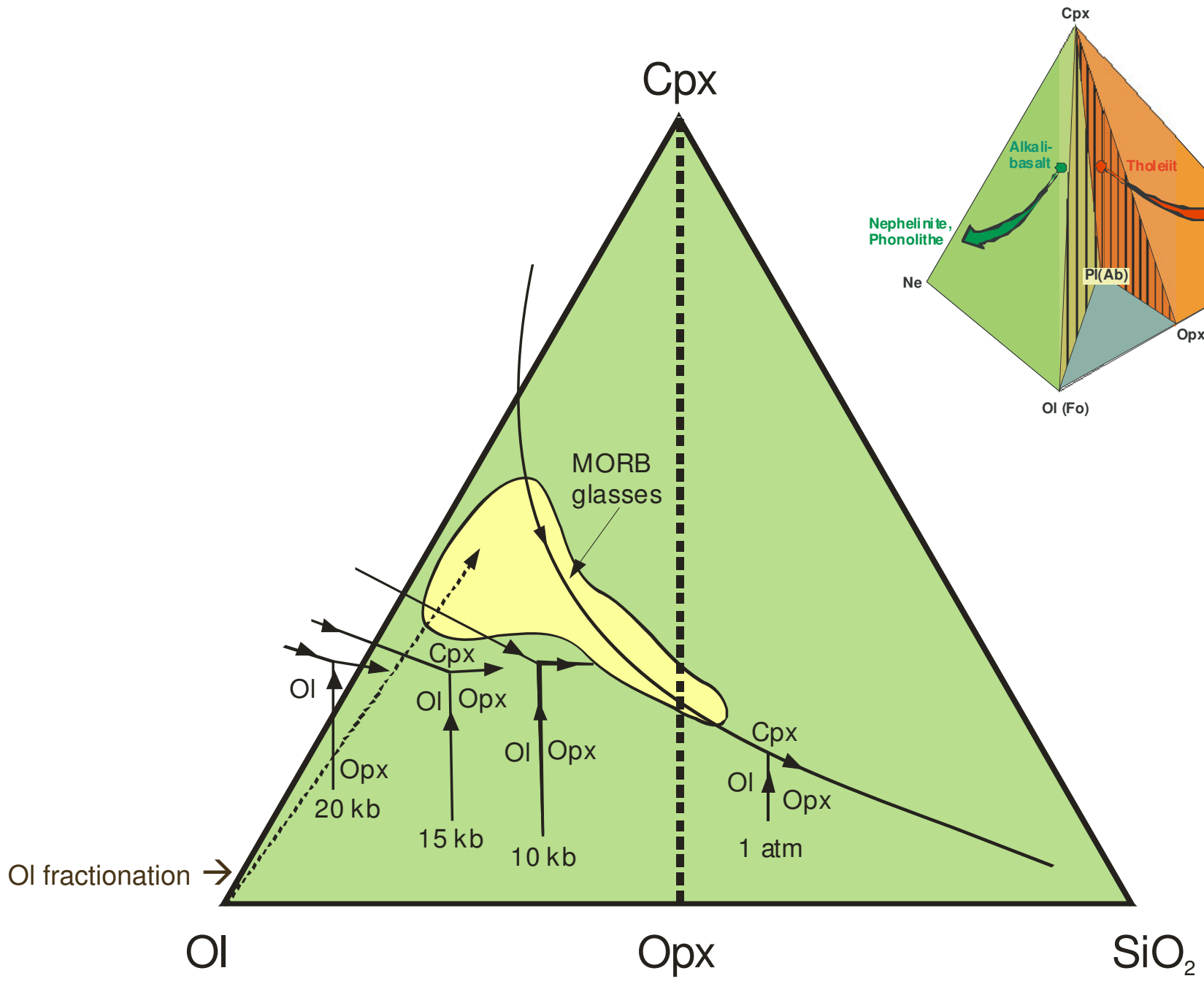




Frühe Kristallisation von Fe-Ti-Oxiden  
 ->keine Fe-Anr.

**Fe-Ti oxides** are restricted to the groundmass, and thus form **late** in the MORB sequence





# Conclusions about MORBs, and the processes beneath mid-ocean ridges

- MORB magmas = product of partial melting of mantle peridotite (lherzolite) in a rising solid diapir
- Melting must take place over a range of pressures
- It appears that primary MORB liquid can only be produced by melting of peridotite at pressures in excess of 15 kb (i.e. deeper than 40 km, perhaps 80 km for normal (N)-MORBs)

