

# THERMODYNAMICS OF GELS: PECTIN GELS

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- **Gelification**

Intrinsic and extrinsic factors affect gelification.

- **Intrinsic parameters**

- Length of the backbone
- Degree of methoxylation (DM)
- Amidation degree

According to the Degree of methoxylation pectins can be classified in high methoxyl (DM>50%) and low methoxyl (DM<50%) pectin.

- **Physical Interactions**

High methoxyl pectin:

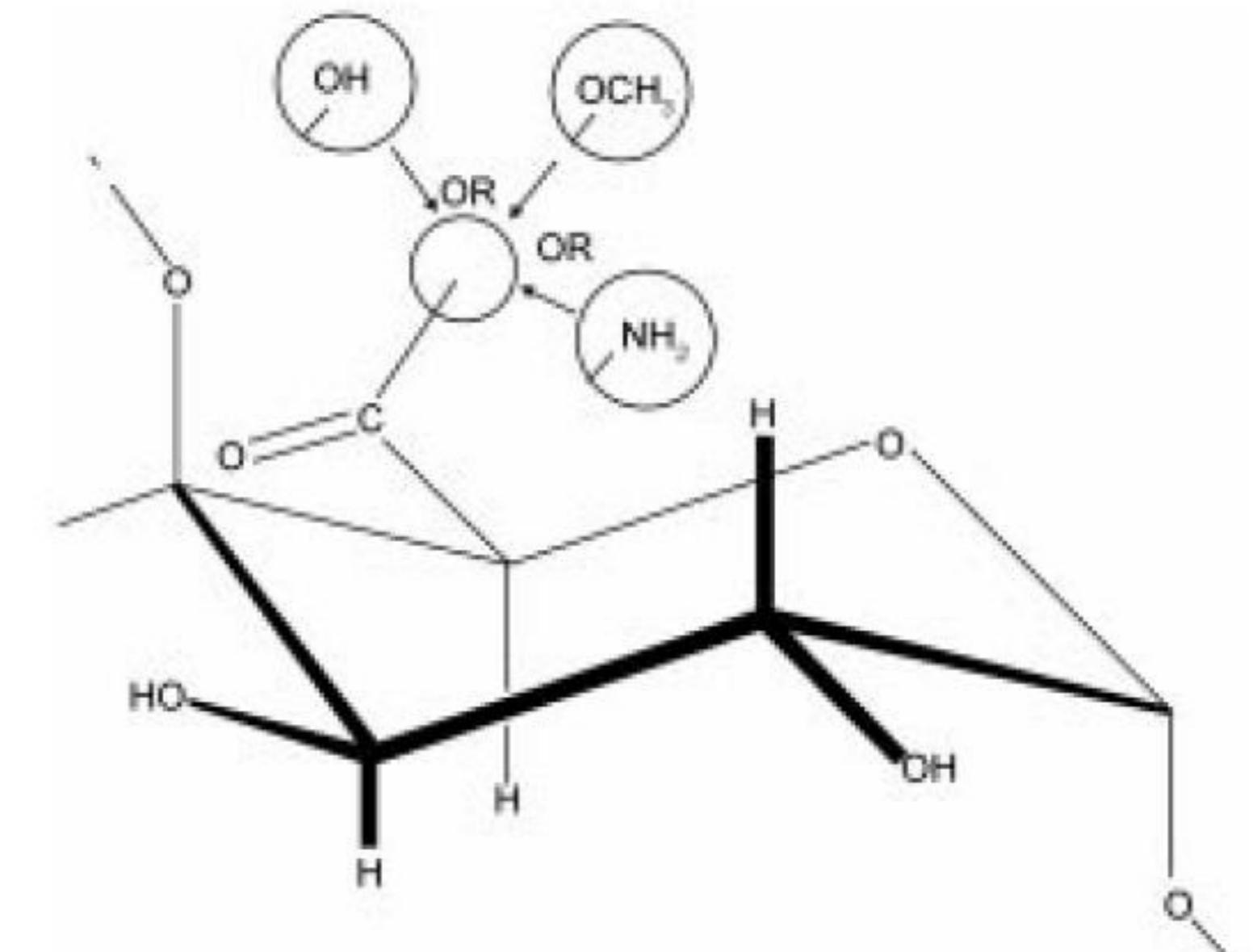
- Hydrophobic interactions
- Hydrogen bonds

Low methoxyl pectin:

- Ca-bridges

- **Pectins**

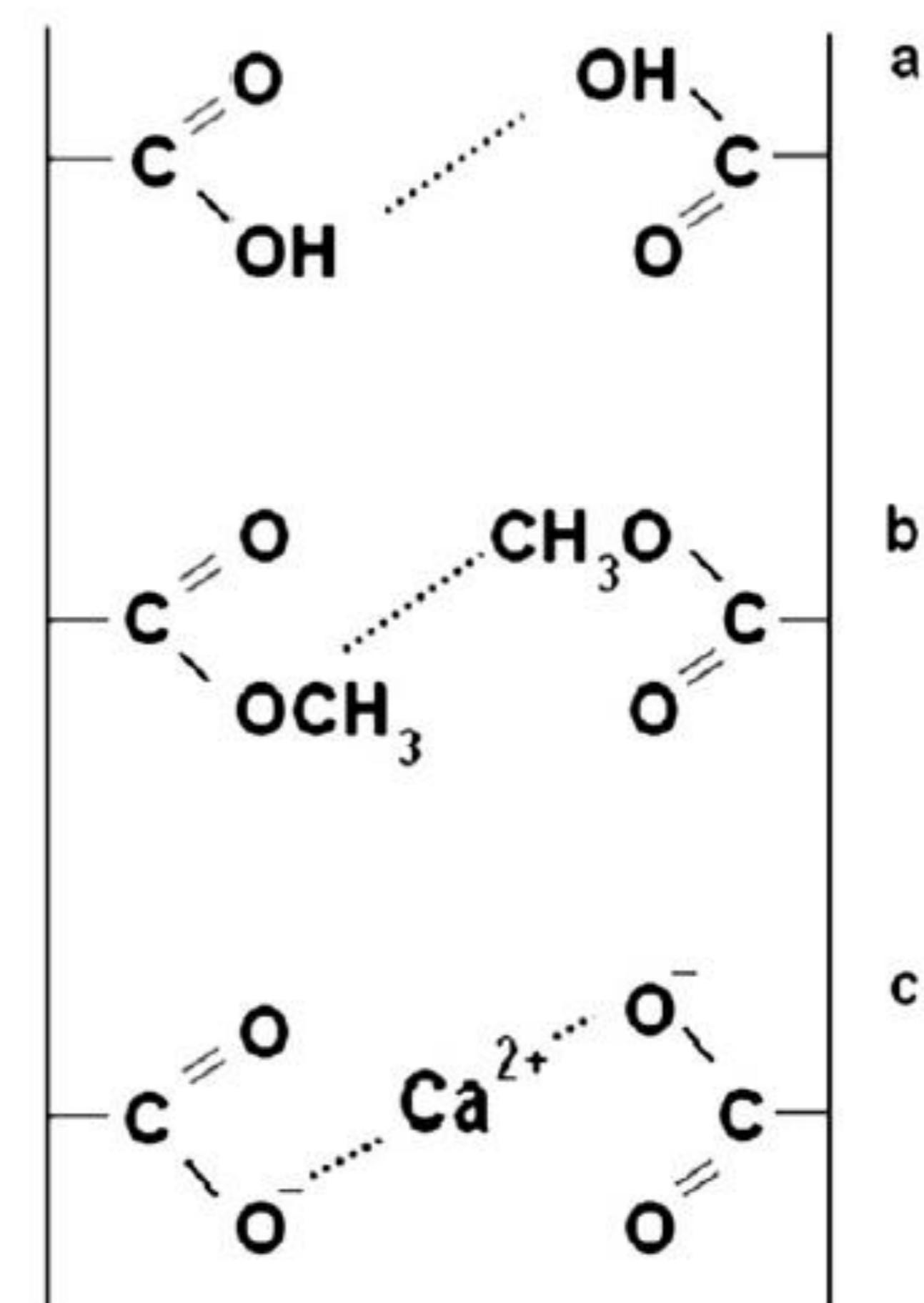
They are naturally present in every plant. They are chains of galacturonic acid and other sugars.



- **Extrinsic parameters**

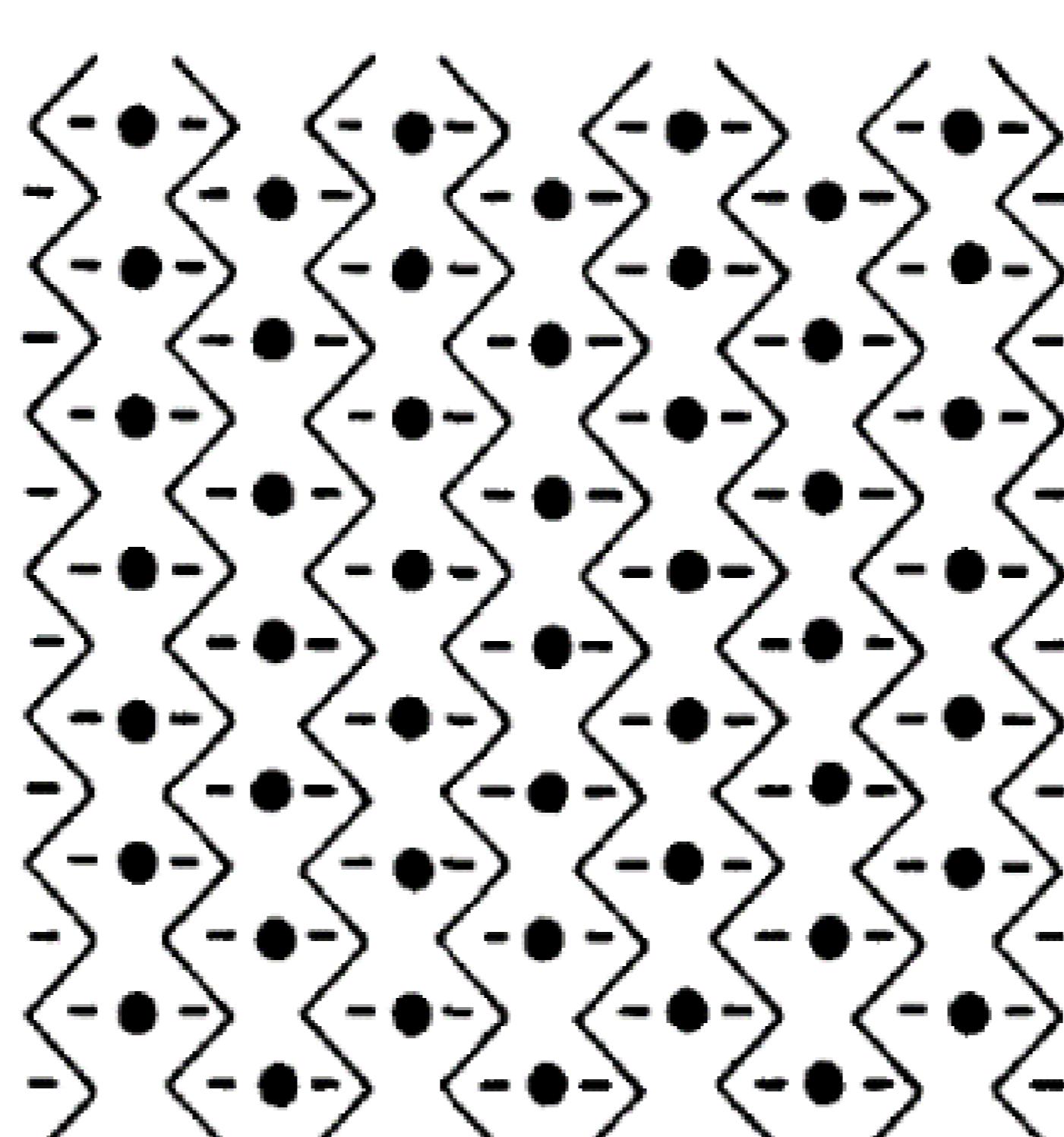
High methoxyl pectin:

- pH  $\rightarrow$  2-3.5
- Soluble solids  $\rightarrow$  >55%



Low methoxyl pectin:

- pH  $\rightarrow$  2.5-6.5
- $[\text{Ca}^{2+}] \rightarrow >20 \text{ mg/g pectin}$



- **Applications**

There are loads and different applications, the most important one is the use in marmalades.