

Enhancement of a Urea-Formaldehyde Resin by *Intercalated Kaolinites*

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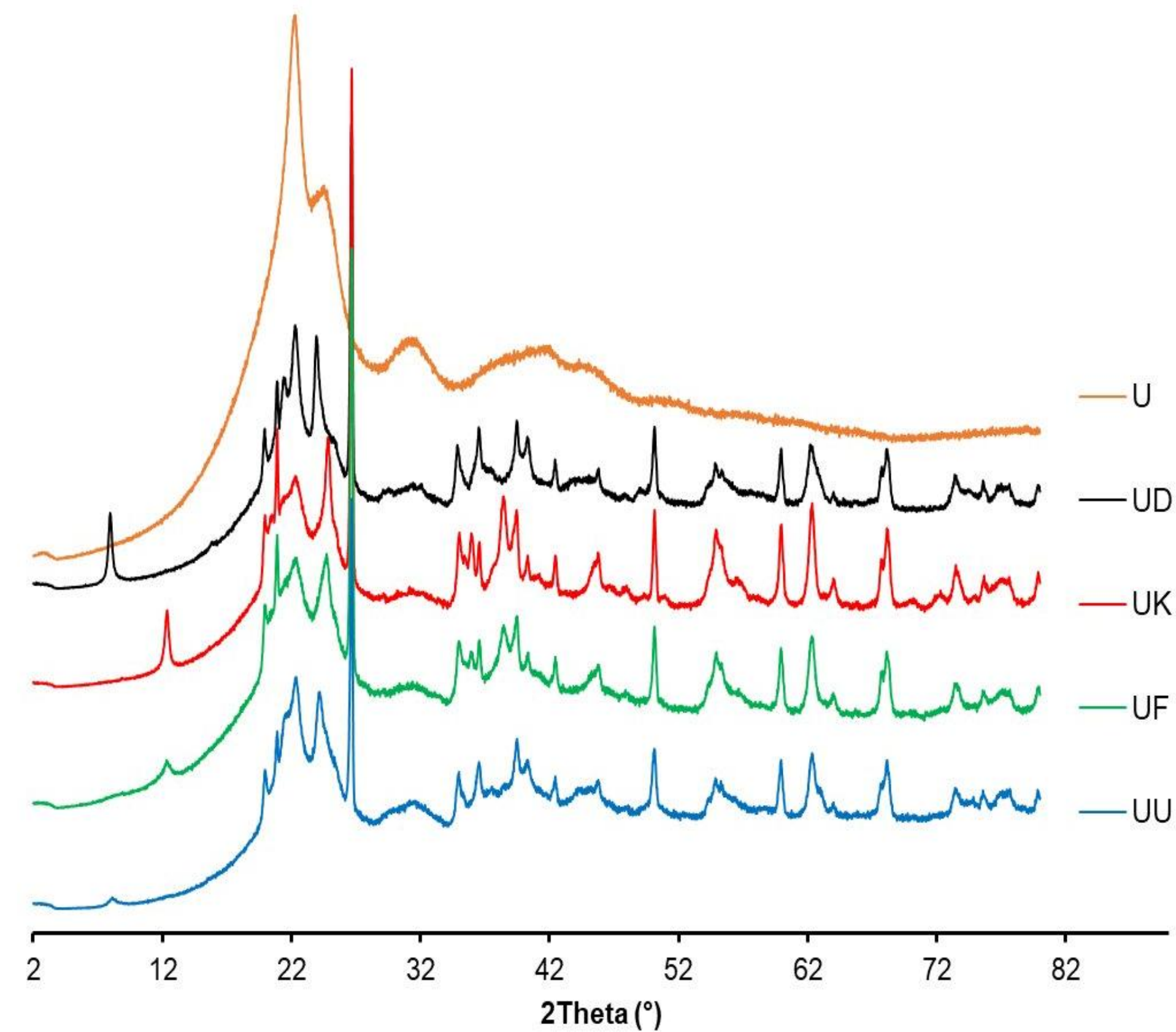


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Results

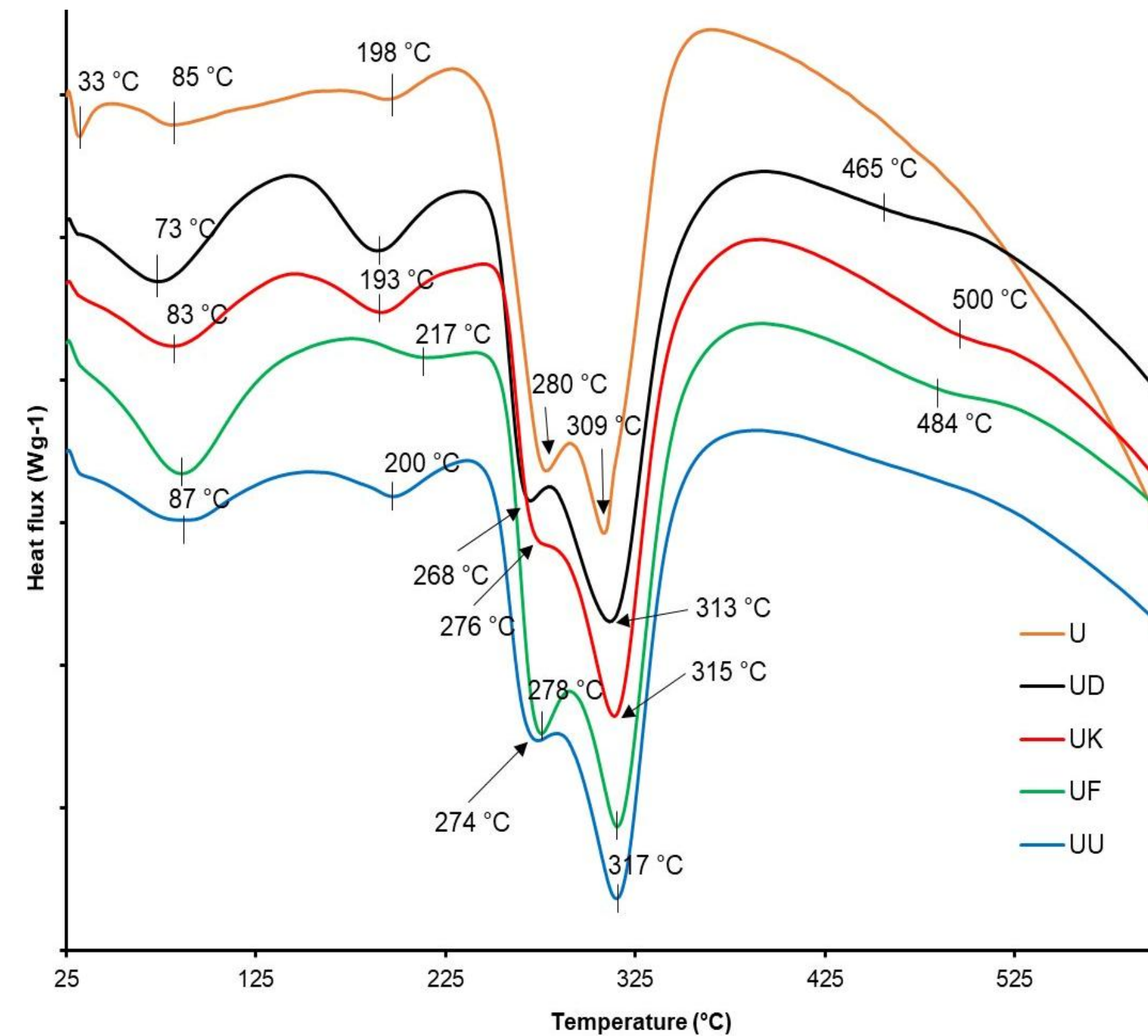
● X-RAY DIFFRACTION (XRD)



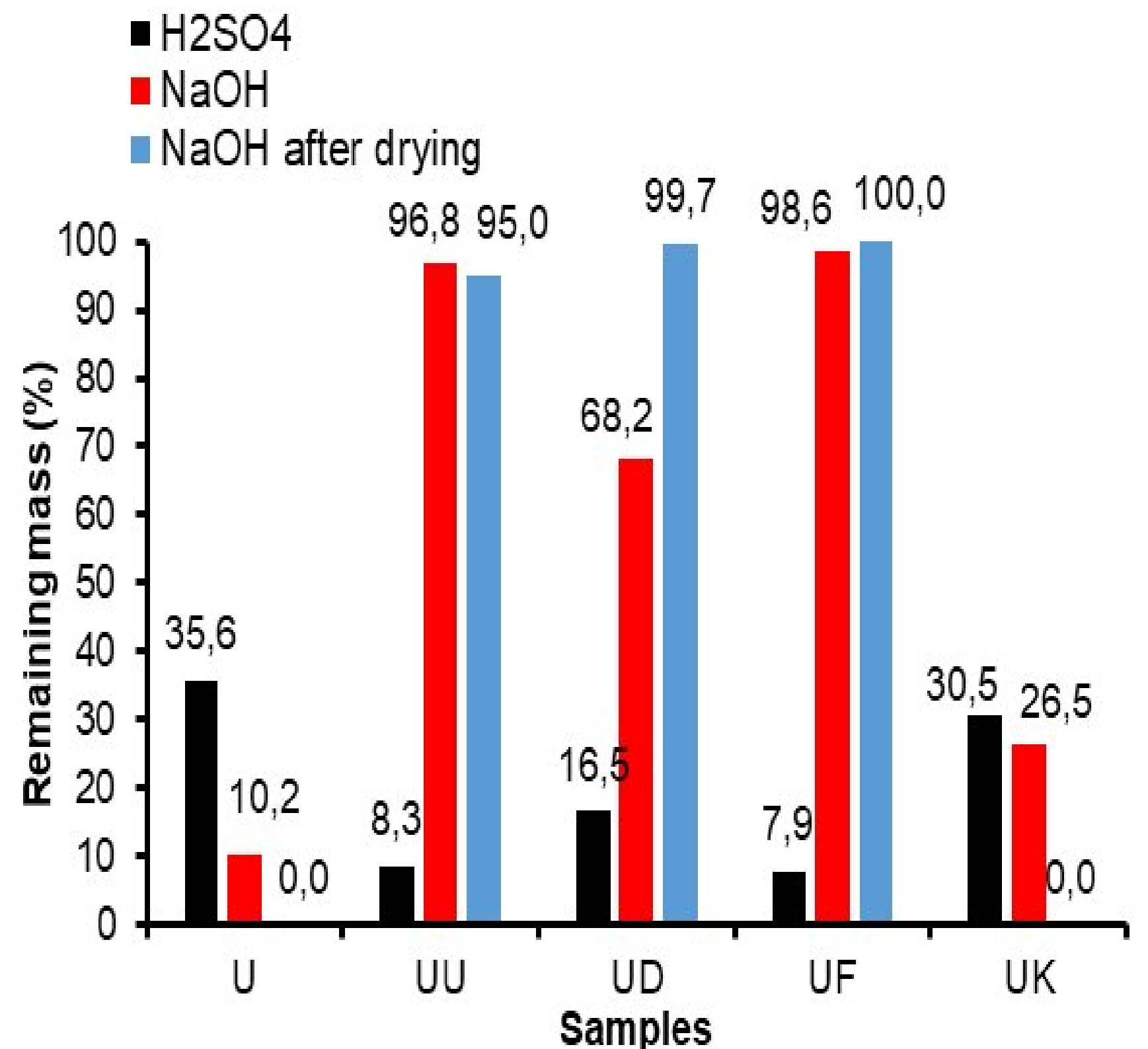
Amorphous hump for neat UF (U). All composites show kaolinite crystalline peaks with varying exfoliation levels: UF < UU < UD < UK.

● CALORIMETRY (DSC)

Moisture (33–87 °C), polycondensation (193–217 °C). Decomposition (280–317 °C). Intercalated composites shift degradation to higher temperatures.



● CHEMICAL RESISTANCE (H₂SO₄ / NaOH)



UF and UD: ≥99.7% alkali resistance. All composites dissolve in acid except UK (30.5%).

Goal



- To enhance the stability of urea-formaldehyde resin with kaolinite.

● PHYSICAL PROPERTIES

Sample	Water uptake (%)	Density (g/cm ³)	Degradation (%)
U	15.1	1.126	49.4
UU	16.4	1.339	15.7
UD	16.4	1.247	23.7
UF	17.2	0.904	5
UK	26.9	1.514	29.3

Reference

IARC, W. G. (2006). Formaldehyde, 2-Butoxyethanol and 1-tert-Butoxypropan-2-ol. International Agency for Research on Cancer.

Key Findings



Experimental section



Formaldehyde + Urea

