

**DEGRADATION KINETICS DIFFERENCE
AMONG SONOLYSIS, MICROFLUIDIZATION,
AND SHEARING TREATMENT AND THE
RATIONALE OF APPLYING THOSE PHYSICAL
METHODS IN PRACTICAL CHITOSAN
PRODUCTION**

RONG HUEI CHEN,^{a,b,*} MIN LANG TSAI^{a*} LAN
ZANG TSENG^a AND CHU HSI HSUA,^c

^a *Department of Food Science, National Taiwan
Ocean University, 2 Pei-Ning Road, Keelung
20224, Taiwan*

^b *R & D Center, Seaparty International Co., LTD,
Rm 201, 2F, Building B, Huang Kong Street,
Keelung, 20248. Taiwan.*

^c *Department of Food and Beverage Management,
Yuanpei University, 306, Yuanpei Street, Hsinchu
30015, Taiwan*

Solution concentration, temperature, reaction time and with or without concurrent ultrafiltration treatment for fragment removal are factors that affect the degradation rate constant in sonolysis, microfluidization, and shearing treatments. The cause of these operation conditions and their effect on chitosan degradation rate constant were compared. Different operation conditions of each treatments resulted in various solution viscosity, easiness in dissipation of cavitation, entanglement and stretching in turn resulted in different effectiveness of degradation by different degradation mechanisms. The rationale of applying those physical methods in practical chitosan production was proposed.

Keywords: physical methods; sonolysis; microfluidization; shearing; molecular weight