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• 研究人員	呂文芳 Leu, Wen-Fang		
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• 英文關鍵字	Solid-liquid separation；Cake；Non-newtonian fluid；Rheology；Flocculation		
• 中文摘要	通常利用濾餅洗滌的方式,來達成改善濾餅品質的目的。而影響濾餅洗滌之因素為: (1)濾餅之孔隙形,(2)清洗液之流變特性, (3)清洗液與母液之混合程度,及(4)溶質擴散現象等。本研究將改變操作條件,探討洗滌效率的改變。 非牛頓流體於洗滌時,表面流速是一定值,當改變壓力降時可得不同之流速。因為聚丙烯酸鈉溶液屬於剪力稀薄(Shear Thinning,N<1)流體,所以將流速對壓力降作圖,得一向上翹的曲線,若將流速取 N 次方之後即與壓力降成直線關係,與理論推導結果相符合。 清洗液為幂次流體時,因為流動緩慢,清洗液可以停留在濾餅中較長的時間,此時擴散效應的影響在初期便占有很重要的地位。最後結果可知當 N 值愈小時,則其洗滌效率有較佳的表現。 於過濾時添加凝聚劑,當以清水洗滌濾餅時,清水會將原先吸附於粒子團中的凝聚劑從粒子團中帶出。此時最終出口清洗液的濃度,比沒有添加凝聚劑時為高。但添加適當凝聚劑時,達到一定洗滌效率所需的時間較短。事實上,若粒子對於溶質吸附量相同時,添加凝聚劑的洗滌效率,將會比沒有添加凝聚劑時為好。 濾餅於洗滌初期,主要是置換機構所控制,而添加絮凝劑會改變濾餅的結構,使得濾餅的孔隙較大。因為孔隙較大,清洗液與母液可於洗滌初期得到較佳的混合稀釋效果。隨著絮凝劑的濃度愈大,初期的混合及置換效果愈好。		
• 英文摘要	Cake washing is usually used to enhance cake quality. The factors affecting cake washing are (1) the structure of pores in the cake, (2) the rheology of the washing liquid, (3) mixing of washing liquid and mother liquid, and (4) diffusion of the solute. This research was to investigate the changes of washing efficiency by altering operation conditions. The superifical velocity of non-Newtonian fluids used for washing is a constant. Plotting the velocity against pressure drop, we can get a concave curve. This is due to the shear thinning (N<1) of non-Newtonian fluids. Taking velocity's N exponent and plotting again results in a linear relation with the pressure drop. This is the same expected according to the theoretical result. When the wash liquid is a power low fluid, it		

can stay longer in the cake because of its slow flow. In this case, diffusion plays a main role initially. It is known that washing efficiency will be higher when N is a smaller value. Adding a coagulant during the filtration operation and using water as a wash liquid in leaching of the coagulant which adsorbed on particles. In this case, the last output of the washing liquid concentration became higher than without adding a coagulant. Otherwise, the time to reach a washing efficiency with proper coagulant is less. In other words, if particle adsorbed the same amount of solute, washing efficiency of added coagulant will be better than that without added coagulant. In the initial period, cake washing was mainly controlled by a displacement mechanism. Adding flocculant changed cake structure and made the porosity of the cake larger. That resulted in a better mixing of washing liquid and mother liquid. Higher flocculant concentration led to a better mixing and displacement performance in the initial period.