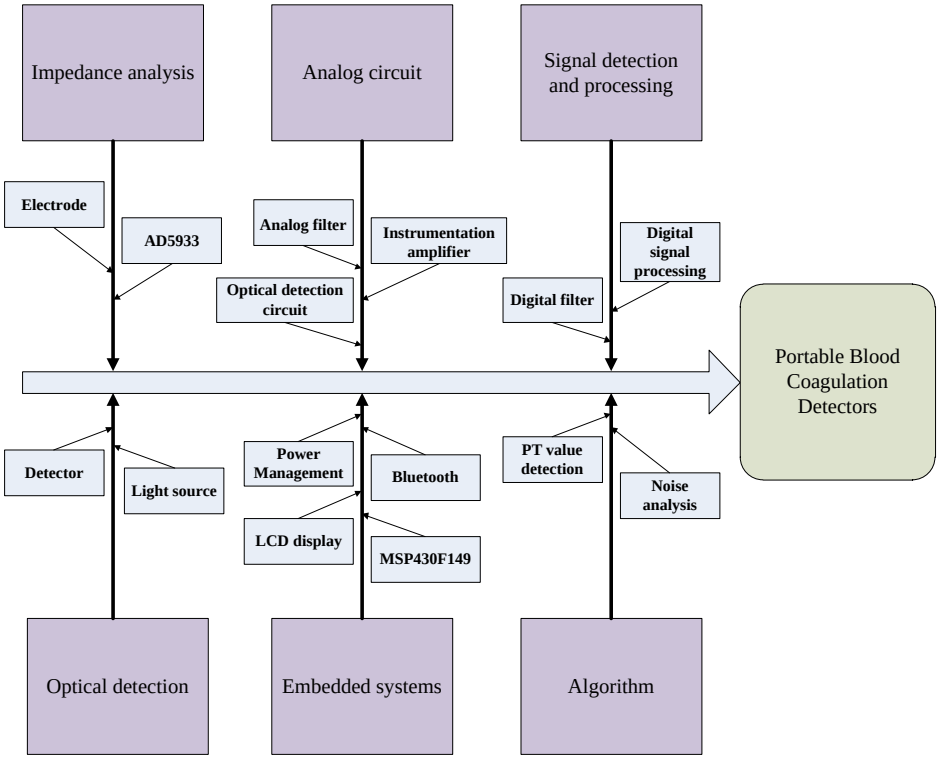
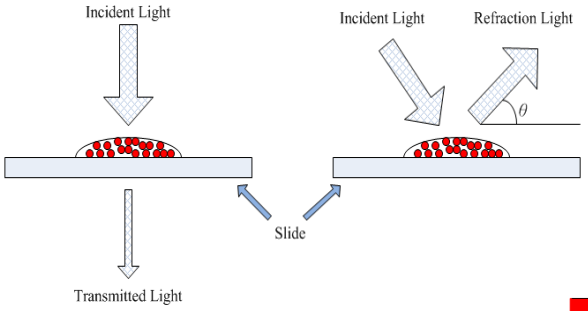
# Design and Clinical Verification of High Accurate Portable Blood Coagulation Instrument

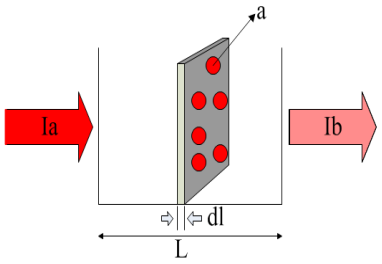


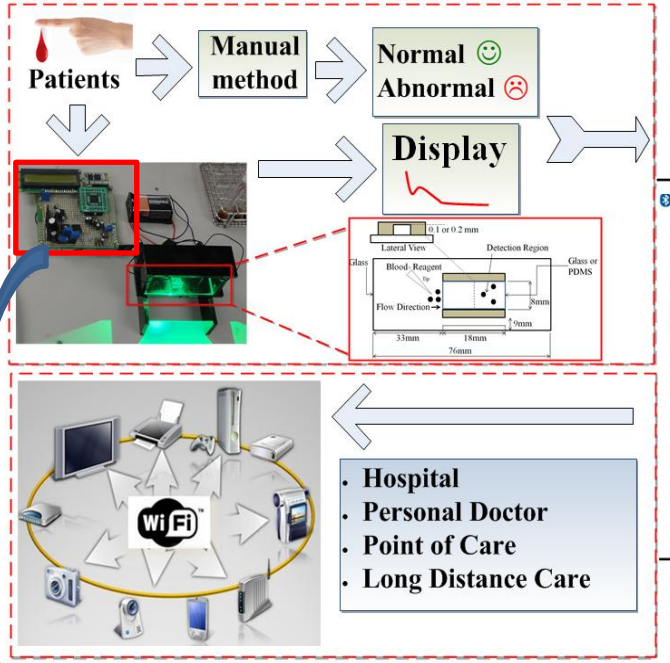

本論文研究架構圖

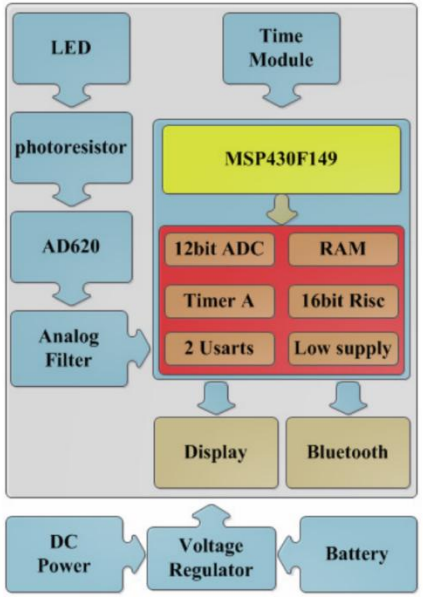



使用透射光法檢測凝血

$$A = \varepsilon \times l \times c$$

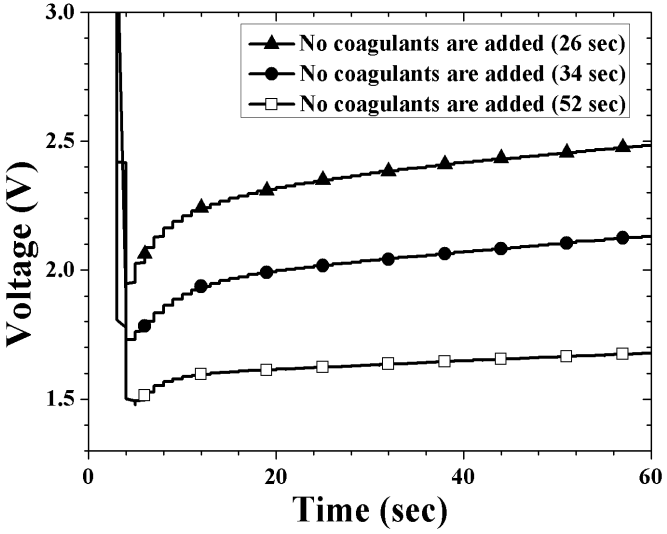


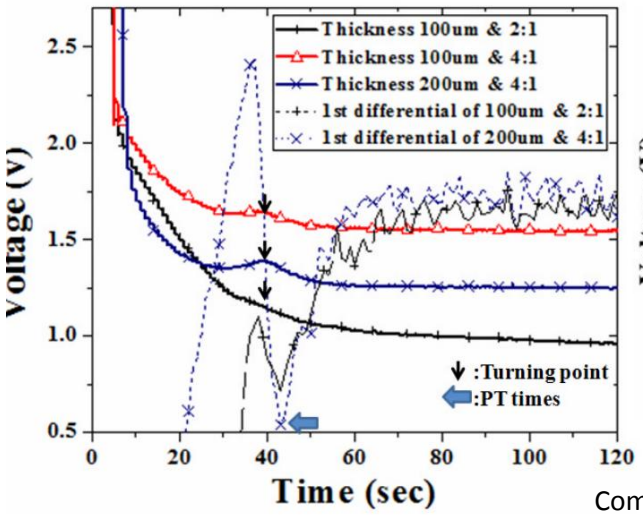



# Design and Clinical Verification of High Accurate Portable Blood Coagulation Instrument

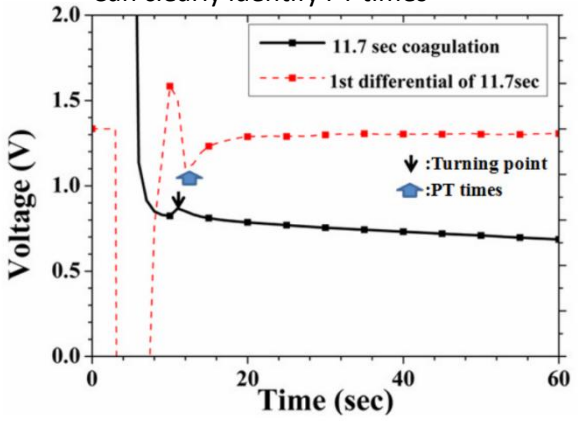
不會凝結得血液凝血訊號圖




Change blood Thickness and Concentration

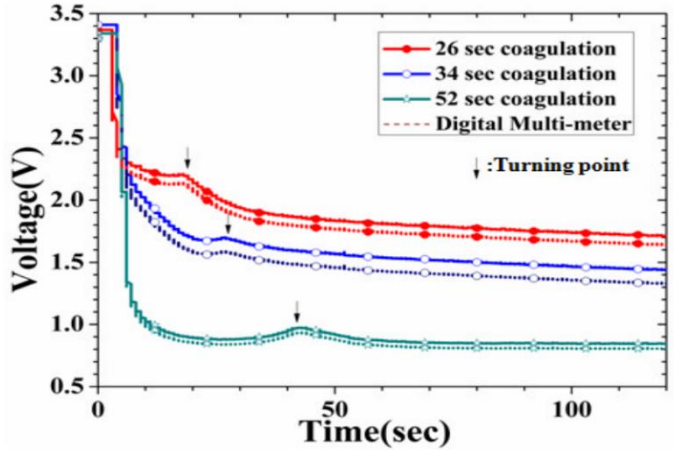



Can clearly identify PT times

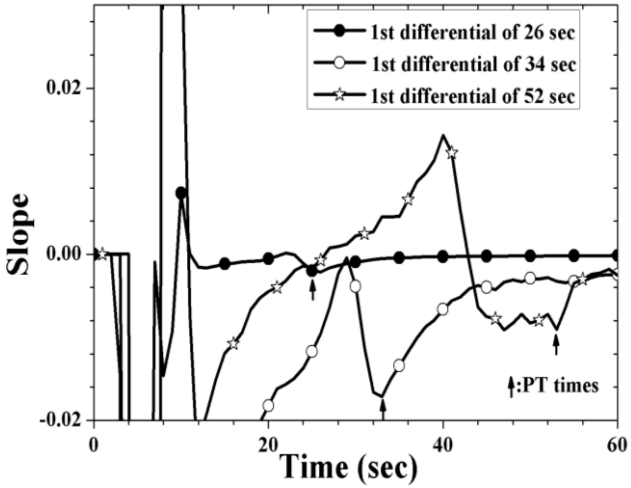


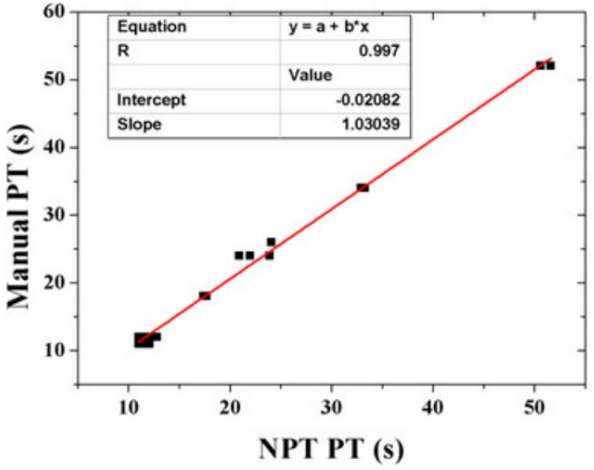

Comparison of PT values with the POCT and manual methods.The results from this portable POCT device were highly correlated with those of manual PT (n=26, r=0.997, p<0.001, Y = 1.03 X - 0.02)

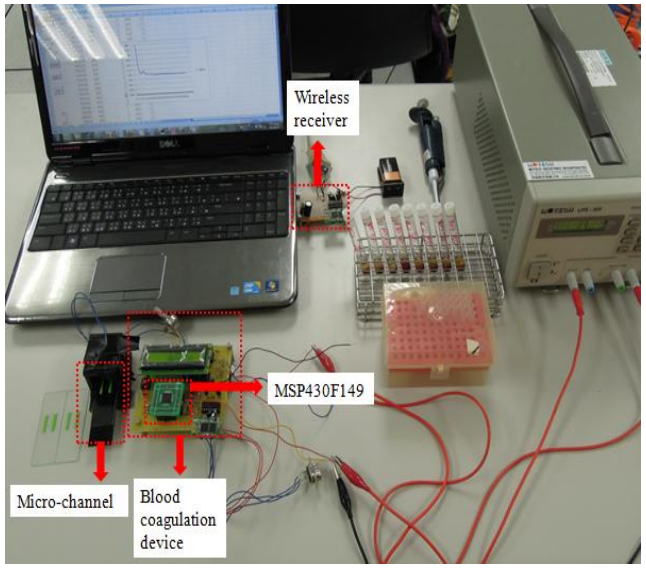
clinical PT at 26, 34, and 52 seconds:



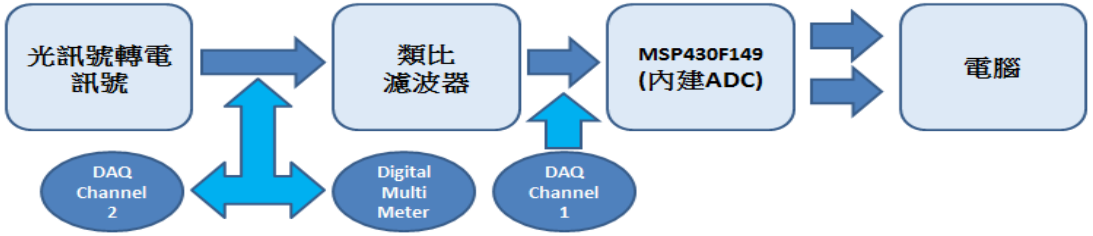

可藉由一階微分判斷凝血時間



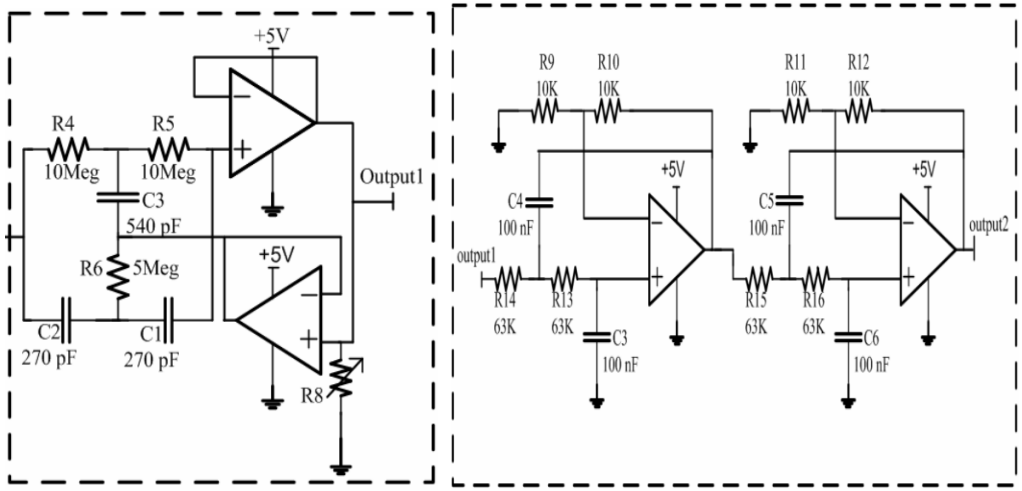



實驗架設圖

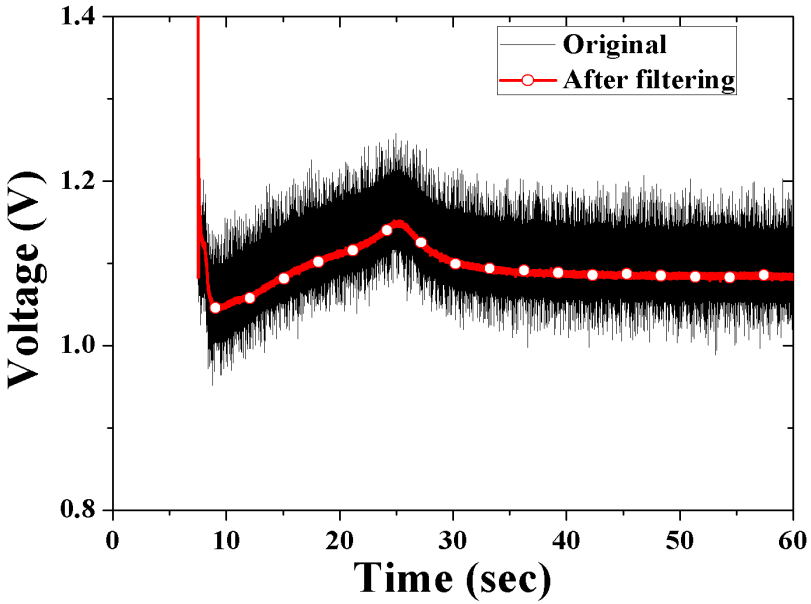



重複性實驗，驗證系統重複性

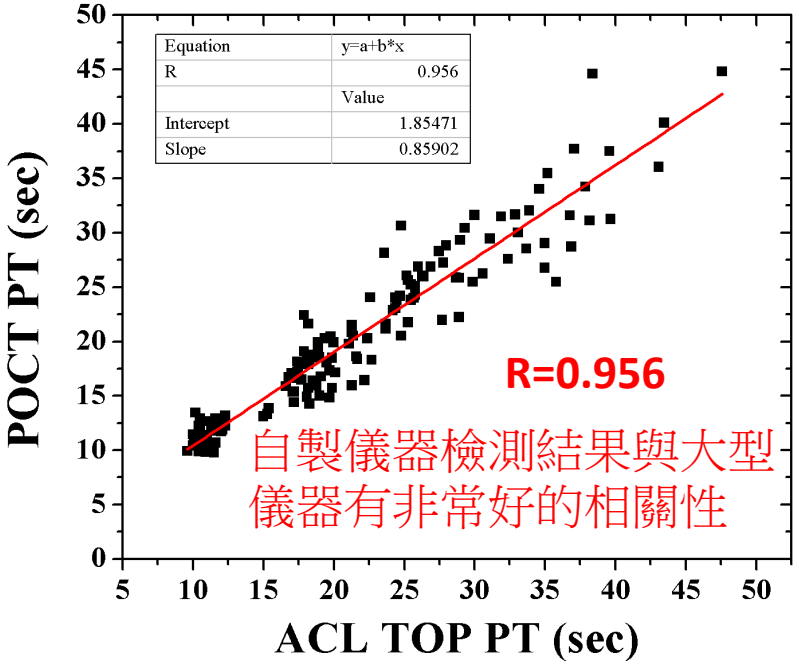
| Test No / Manual Time (sec) | No1 | No2 | No3 | No4 | No5 | No6 | No7 | No8 | No9 | No10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 13 | 13.0 | 13.0 | 12.0 | 12.2 | 12.7 | 12.8 | 13.0 | 12.2 | 12.6 | 12.7 |
| 22 | 21.3 | 21.1 | 21.2 | 21.3 | 20.8 | 20.9 | 20.8 | 21.4 | 20.7 | 21.0 |
| 26 | 26.5 | 25.3 | 24.5 | 25.4 | 25.6 | 24.4 | 25.4 | 24.6 | 23.4 | 24.5 |
| 32 | 31.2 | 30.8 | 30.6 | 31.3 | 30.9 | 29.6 | 29.6 | 29.2 | 28.9 | 29.5 |

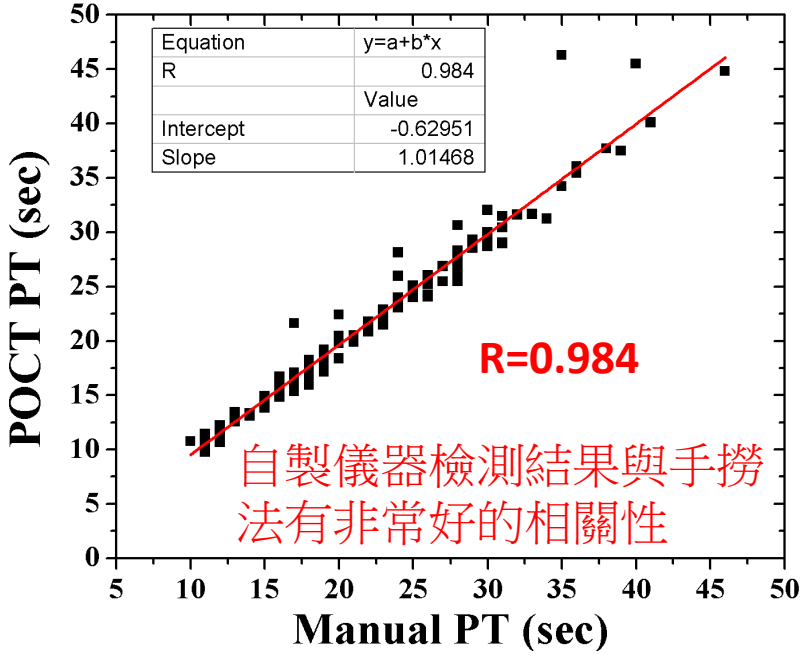


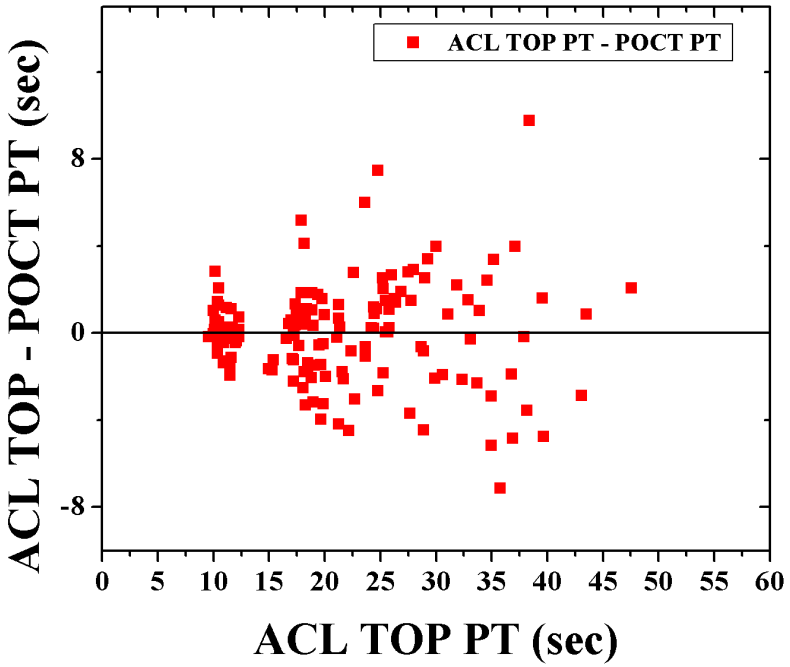

類比濾波器

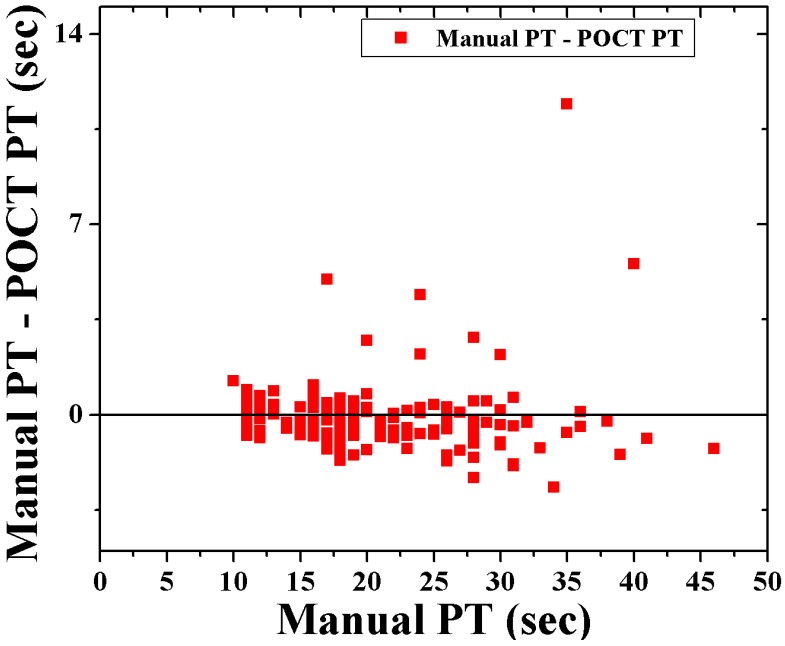



濾波前與濾波後比較


Equation y=a+b*x
R 0.956
Value
Intercept 1.85471
Slope 0.85902
R=0.956
自製儀器檢測結果與大型儀器有非常好的相關性
POCT PT (sec)
ACL TOP PT (sec)


Equation y=a+b*x
R 0.984
Value
Intercept -0.62951
Slope 1.01468
R=0.984
自製儀器檢測結果與手撈法有非常好的相關性
POCT PT (sec)
Manual PT (sec)


ACL TOP PT - POCT PT
ACL TOP - POCT PT (sec)
ACL TOP PT (sec)


Manual PT - POCT PT
Manual PT - POCT PT (sec)
Manual PT (sec)