Detection of common wound infection bacteria based on FAIMS technology

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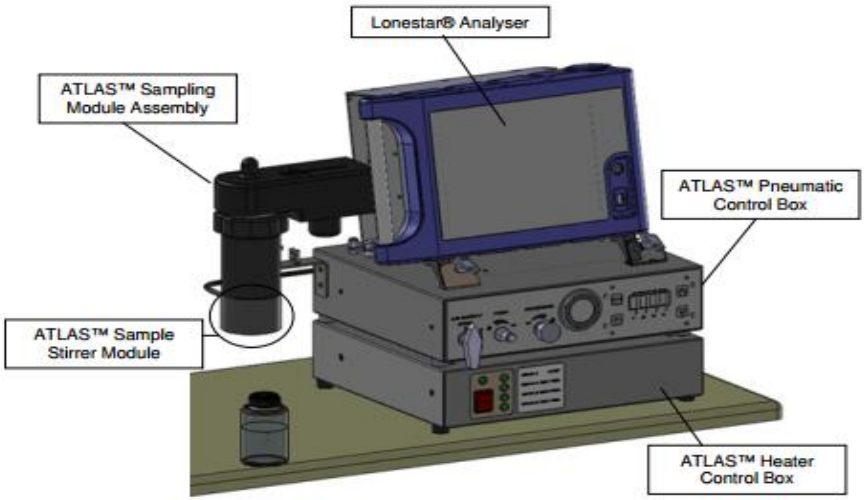
Problems & Ideas

- Problems of Common Wound Bacteria Detection Based on FAIMS Technology
  - Traditional detection methods are cumbersome, time-consuming and costly
- Ideas: Using the new FAIMS technique to detect four kinds of common bacteria
  - We used three different feature extraction algorithms to extract features of FAIMS data, and then classify by machine learning algorithm.
  - We used the new FAIMS technique to get the fingerprint image.



Main Contributions

- **Classification accuracy in cross validation for all algorithms**

Feature extraction algorithm	Classification algorithm	Data ratio（Sample size）	Average recognition rate(%)	Optimal parameter
GLCM	RF	741:82	99.30	t= 500; d= 3; f=7
	SVM	741:82	100	Sigma=1.0403; C=1.3848
	ELM	741:82	99.15	h=2000 C=1024
	KNN	741:82	98.18	K=5; N=4
Multiscale wavelet energy	RF	741:82	100	t= 500; d= 3; f=8
	SVM	741:82	98.56	Sigma=5.1709e+04 C=1.1887e+04
	ELM	741:82	92.34	h=2000 C=1024
	KNN	741:82	97.94	K=5; N=4
LBP+PCA	RF	741:82	95.27	t= 500; d= 3; f=7; i=10
	SVM	741:82	88.67	Sigma=1.5367e+04 C=1.0753e+04
	ELM	741:82	98.18	h=2000 C=1024
	KNN	741:82	91.65	K=5; N=4
PCA+LDA	RF	741:82	94.65	t= 500; d= 3; f=8; N=4
	SVM	741:82	99.03	Sigma=194.20 C=4.4627e+04
	ELM	741:82	96.36	h=2000 C=1024
	KNN	741:82	94.66	K=5; N=4