

## Appendix A

# Summary of characterization system metrics

<b>Parameter</b>		<b>Value</b>	<b>Units</b>
<b>System Bandwidth</b>	<b>Characterization System</b>	150	<b>Hz</b>
<b>Force</b>	<b>Dynamic Range</b>	10	<b>N</b>
<b>Displacement</b>	<b>Resolution of LVDT</b>	5.8	<b><math>\mu\text{m}</math></b>
	<b>Dynamic Range of LVDT</b>	$\pm 3.2$	<b>mm</b>
	<b>Dynamic Range of Minishaker 4810</b>	$\pm 3$	<b>mm</b>
	<b>Bandwidth of LVDT</b>	500	<b>Hz</b>
	<b>Dynamic Range/Displacement Resolution Ratio</b>	1103	
<b>Flow Rate</b>	<b>Resolution of Flow Rate</b>	$\pm 0.02$	<b>mL/min</b>
	<b>Dynamic Range of Flow Rate</b>	$\pm 200$	<b>mL/min</b>
	<b>Bandwidth of Flow Rate</b>	150	<b>Hz</b>
	<b>Dynamic Range/Flow Resolution Ratio</b>	10000	
<b>Differential Pressure</b>	<b>Resolution of Pressure Sensor</b>	0.25	<b>%FS</b>
	<b>Dynamic Range of Pressure Sensor</b>	$\pm 5$	<b>psi</b>
	<b>Response Time of Pressure Sensor</b>	1	<b>msec</b>
	<b>Dynamic Range/Pressure Resolution Ratio</b>	400	

Table A.1: Summary of the impedance pump characterization system metrics.