

**ANNEX "B"**  
**MANDATORY TECHNICAL SPECIFICATIONS**

Item	Description	Status	Requirement	YES	NO	Bidder Response	Bidder Cross Reference (SIR)	What's expected in your proposal
	The National Research Council of Canada is interested in improving its capacity for printing localized, on-demand depositions of multifunctional inks and resists for document security features within the framework of on-going projects in the Printable Electronic flagship program. In the context of this mandate, NRC is looking to acquire an <u>Inkjet Deposition System</u> to develop and test processes for encapsulating polymer-based micro-devices with custom fluids developed by Functional Nanomaterials Group for biomedical or marketing applications. The scope of this work includes the furnishing, delivery, installation and training for the equipment on or before March 31, 2014. The equipment must have a warranty of at least one year for parts and labour. The supplier must provide telephone after sales service during normal working hours from 8h30 to 16h30, Monday to Friday for a period of at least one-year after installation.		<b>Note:</b> It's a mandatory requirement that the bidder meets all of the mandatory and minimum mandatory specifications, as identified under Annex "A". Failure to meet the mandatory requirements addressed in this Annex will result in your proposal being deemed non-responsive and it shall not be given any further consideration in the evaluation process. <u>Action item for the bidder:</u> <i>The bidder is to check-off whether they meet this requirement or not. Example: (X) Yes or (X) No</i>					<b>STATUS :</b> <b>M</b> =Mandatory; <b>I</b> = Information ; <b>D</b> =Desirable
1	<b>Base system</b>							
1.1	Fluids viscosities	<b>M</b>	Must be able to jet a variety of custom functional fluids with viscosities ranging from a minimum of 2 centipoise to a maximum of at least 20 centipoise					Provide detailed documentation, brochures with proposal.
1.2	Fluids pH	<b>M</b>	Must be able to jet a variety of custom functional fluids with pH values ranging from at least 4 to 9.					Provide detailed documentation, brochures with proposal.
1.3	Visualization of drop	<b>M</b>	Must include a device to visualize the drop.					Provide detailed documentation, brochures with proposal.
1.4	Cleaning	<b>M</b>	Must include a cleaning system					Provide detailed documentation, brochures with proposal.
1.5	Substrates types	<b>M</b>	Must be able to jet onto different flat surfaces including, plastic, glass, silicon and flexible substrates					Provide detailed documentation, brochures with proposal.
1.6	Graphical User Interface	<b>M</b>	Must include pattern creation via PC-control and Graphical User Interface (GUI) application software					Provide detailed documentation, brochures with proposal.
1.7	Substrate holder	<b>M</b>	Must include a substrate holder with a heated, vacuum platen having a maximum temperature of at least 50°C					Provide detailed documentation, brochures with proposal.
1.8	Substrates thickness	<b>M</b>	Must accept substrates having thickness up to at least 20 mm.					Provide detailed documentation, brochures with proposal.
1.9	Positioning system	<b>M</b>	Must have a positioning system with a minimum printable area of 200 mm in both X and Y printing directions					Provide detailed documentation, brochures with proposal.
1.10	Repeatability	<b>M</b>	Must have a repeatability of 30 microns or better.					Provide detailed documentation, brochures with proposal.

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1.11	Components compatibility	<b>M</b>	Components in contact with fluids must be compatible with the following solvents: aqueous solutions, acrylate-based UV resins, glycols, and hydrocarbons.					Provide detailed documentation, brochures with proposal.
1.12	Power requirements	<b>M</b>	Must operate at 110V/120V, single phase electrical supply and must comply with canadian electrical codes and be CSA approved.					Provide detailed documentation, brochures with proposal.
2	<b>Fiducial camera</b>							
2.1	Fiducial camera	<b>M</b>	Must include a fiducial camera to allow substrate alignment.					Provide detailed documentation, brochures with proposal.
2.2	Measurements	<b>M</b>	The fiducial camera must provide measurement of features and locations					Provide detailed documentation, brochures with proposal.
2.3	Inspection	<b>M</b>	The fiducial camera must provide inspection and image capture of printed patterns.					Provide detailed documentation, brochures with proposal.
3	<b>Ink dispenser</b>							
3.1	Dispenser capacity	<b>M</b>	Must work with user-fillable ink dispenser (cartridge or reservoir) having a maximum capacity of at least 1.5 ml.					Provide detailed documentation, brochures with proposal.
3.1	Drop volume	<b>M</b>	Must be able to provide a minimum drop volume of 20 picoliters or less.					Provide detailed documentation, brochures with proposal.
3.3	Dispenser interchangeability	<b>M</b>	The Inkjet ink dispensers must be interchangeable. At least two different types of ink dispensers must be available					Provide detailed documentation, brochures with proposal.
3.4	Ink temperature	<b>M</b>	Must allow heating of ink up to at least 60°C					Provide detailed documentation, brochures with proposal.
4	<b>Computer and software</b>							
4.1	Computer	<b>M</b>	Must have a complete dedicated high performance computer to control pattern creation and droplet deposition					Provide detailed documentation, brochures with proposal.
4.2	Software	<b>M</b>	Must come with application software for pattern creation, substrate setting and cleaning					Provide detailed documentation, brochures with proposal.
4.3	Files format	<b>M</b>	The software must be compatible with the following files format: Bitmap, DXF, Gerber and GDSII					Provide detailed documentation, brochures with proposal.
5	<b>Deliverables</b>							

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5.1	Ink dispenser for small drop	<b>M</b>	Must include ink dispenser for the smallest available drop size (20 picoliters or less)					Provide detailed documentation, brochures with proposal.
5.2	Second ink dispenser	<b>M</b>	Must include a second ink dispenser with characteristics different from the first one					Provide detailed documentation, brochures with proposal.
5.3	Accessories	<b>M</b>	Must include accessories to fill and to clean ink dispensers					Provide detailed documentation, brochures with proposal.
5.4	Model fluid	<b>M</b>	Must be delivered with a model fluid					Provide detailed documentation, brochures with proposal.
5.5	Technical documentation	<b>M</b>	Must be delivered with at least one printed copy of user's and maintenance manuals in French and/or English for each part of the system and with an electronic version of those					Provide detailed documentation, brochures with proposal.
6	<b>Installation, training and support</b>	<b>M</b>						
6.1	Installation and demonstration	<b>M</b>	The vendor must provide installation of the Inkjet deposition system and demonstrate proper operation.					Provide detailed documentation, brochures with proposal.
6.2	Training to NRC staff in operation & maintenance	<b>M</b>	The supplier must provide a minimum of 1 day in-house training for a maximum of 5 NRC individuals on the use and maintenance of the Inkjet Deposition System and each part of the system					Provide detailed documentation, brochures with proposal.
6.3	Support	<b>M</b>	The supplier must provide telephone after-sales service within 24 hours following a service call for a period of at least one-year after installation.					Provide detailed documentation, brochures with proposal.
7	<b>Warranty</b>	<b>M</b>	Must have a warranty of at least one year for parts and labour					Provide detailed documentation, brochures with proposal.

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