



# **Program Guidelines for CNC Challenge 2.0**

**Developing New Applications for Cellulose Nanocrystals  
(CNC)**

**A collaborative program from**

**Alberta Innovates Bio Solutions &  
Alberta Innovates Technology Futures**

## 1.0 Purpose and Objectives

### 1.1 Purpose

Alberta Innovates Bio Solutions (AI Bio) and Alberta Innovates Technology Futures (AITF) are building upon the successful completion of CNC Challenge 1.0<sup>1</sup> with the new CNC Challenge 2.0 program. The CNC Challenge serves as a pipeline for the development of applications for cellulose nanocrystals (CNC) and opportunities for deployment. This program supports early-stage work to demonstrate technical feasibility of CNC in high-value applications with potential for commercialization.

In line with Government of Alberta priorities and the business plans of both AI Bio and AITF, the purpose of CNC Challenge 2.0 is to increase the knowledge, capacity and value of CNC through research, application development, and innovation.

Investments in CNC technology and application development have grown out of past initiatives including:<sup>2</sup>

- The commissioning of the [CNC pilot-scale facility at AITF](#) (2013) and related applied research activities.
- [BioE Initiative: Recommendations to Build Alberta's Bioeconomy](#) (2013).
- [Alberta Forest Products Roadmap](#) (2011).
- [Getting Value from Every Fibre](#) (Fibre Roadmap) (2007).
- The current [Alberta Bio Future program](#), administered by AI Bio.

CNC consists of nano-scale crystals made from cellulose, the most abundant polymer on earth. These bio-based nanoparticles are needle-shaped, ranging in size from five to 10 nm in diameter and 100 to 200 nm in length.

CNC is produced from biomass subjected to acid hydrolysis. CNC is a biodegradable, non-toxic, high-strength and high-surface-area material that offers opportunities for a wide range of applications. Current research in Alberta includes applications in the fields of energy, health, industrial coatings, electronics and the environment.

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<sup>1</sup> CNC Challenge 1.0 was funded by AITF and sponsored by nanoBridge, a funding program for R&D and commercialization of nano technologies at the University of Alberta. NanoBridge is now known as [NanoFab](#).

<sup>2</sup> URLs for these links:

CNC pilot plant at AITF: <http://www.albertatechfutures.ca/OurTeams/CNC.aspx>

BioE initiative: <http://bio.albertainnovates.ca/stratthemes/bioecoadvance/bioe-initiative/>

Forest Products Roadmap: <http://www.albertaforestroadmap.ca/>

Fibre Roadmap: [http://eae.alberta.ca/media/180652/fibre\\_roadmap.pdf](http://eae.alberta.ca/media/180652/fibre_roadmap.pdf)

Alberta Bio Future program: <http://bio.albertainnovates.ca/funding/abf/>

The CNC Challenge 2.0 program will support up to eight projects, providing each successful applicant with the following:

- Up to \$25,000 in funding for their CNC project research.
- Up to one kilogram of CNC from the AITF pilot plant.
- Access to AITF's researchers, capacity and facilities to assist in the successful delivery of their project.

Successful projects have the potential for ongoing support toward commercialization.

### Objectives

- To demonstrate technical feasibility of CNC in high-value applications with commercialization potential.
- To advance the state of the art for the application of CNC.

## 1.2 Guiding Principles

- **Value:** Projects must bring demonstrated value to Alberta and Albertans.
- **Rigour and Excellence:** Projects will be subject to rigorous evaluation.
- **Due Diligence:** We will only invest in high-quality projects.
- **Collaboration:** Applicants are encouraged to identify opportunities for collaboration.
- **Leveraging, Collaborations and Partnerships:** Applicants are encouraged to identify opportunities to maximize project financing, resources and use of highly qualified personnel and infrastructure, through leveraging, partnerships and collaborations amongst government, academic and/or private-sector organizations.
- **Multi-Sector Participation:** We encourage cross-sector participation in the development of innovations. For example, projects involving multiple feedstock or end-use sectors are encouraged.

## 1.3 Eligibility

Projects must:

- Be completed within **one year**.
- Focus on the development of applications for CNC.
- Be submitted by researchers at Canadian institutions, companies or other organizations.
- Focus on developments leading to potential commercialization opportunities in Alberta.
- Engage a project team with demonstrated competence, experience and the organizational capacity to successfully complete the project.

## 2.0 Guidelines for Project Submission

### 2.1 Process and Deadlines

Proposals are invited from applicants wishing to participate in the **CNC Challenge 2.0** program. Each proposal must be submitted in the form of a Letter of Intent (LOI) through the AI Bio research funding online application system: [www.fundingconsortium.gov.ab.ca/aibio/account](http://www.fundingconsortium.gov.ab.ca/aibio/account). The application process will be a one-stage process, in the form of a Letter of Intent.

Proposals will be reviewed and assessed by an AI Bio and AITF Selection Committee (which may include external reviewers) for alignment with the program purpose, objectives and evaluation criteria identified in Section 4.0 of these guidelines.

Timelines	Date and time
CNC Challenge 2.0 program opens to submission of proposals in the form of LOIs.	Fri., Feb. 26, 2016
Deadline for submission of proposals.	Wed., April 13, 2016, 4 p.m. MST
Proposal review.	April 14 – June 1, 2016
Communication to applicants about successful and unsuccessful proposals.	June 2, 2016
Agreements developed with successful applicants.	After June 2, 2016

### 2.2 Submission of Proposal as Letter of Intent

The application form for LOIs can be found in the AI Bio online application system: [www.fundingconsortium.gov.ab.ca/AIBio/Account](http://www.fundingconsortium.gov.ab.ca/AIBio/Account), under the program listing for **Alberta Innovates Bio Solutions CNC Challenge 2.0**.

## 3.0 Project Information

### 3.1 Eligible Expenses

Eligible expenses are those costs associated with the development of new and innovative, proof-of-concept projects involving CNC.

Category	Eligible Expenses
<b>Personnel – Project Team</b>	<ul style="list-style-type: none"> <li>Time involved in specific activities related to the project, prorated at usual annual salary rates.</li> <li>Time for specific activities undertaken by project team members may be acceptable as in-kind contributions.</li> </ul>

<b>Travel</b>	<ul style="list-style-type: none"> <li>• Travel to give presentations, to discuss the project with stakeholders and for information dissemination purposes.</li> </ul>
<b>Capital Assets/Equipment</b>	<ul style="list-style-type: none"> <li>• Equipment directly required for the project, as specified in the program description documents and approved by AI Bio and AITF.</li> </ul>
<b>Supplies</b>	<ul style="list-style-type: none"> <li>• Cost of supplies directly required for the project.</li> </ul>
<b>Incremental costs</b>	<ul style="list-style-type: none"> <li>• Incremental costs required to deliver the project are eligible.</li> <li>• Overhead costs are not eligible.</li> </ul>

### 3.2 Funding Sources

Applicants are encouraged to leverage additional funding for their project. Public and private sources may contribute to the project costs in cash or auditable in-kind.

### 3.3 Progress Reports and Financial Reporting

Successful project proponents will be required to submit a final progress report and final financial report **within three months** of project completion.

### 3.4 Intellectual Property Principles

Intellectual property owned by the applicant must be managed by the applicant or the applicant’s organization. Applicants must ensure that they have sufficient right to intellectual property to be able to implement the project. Ownership of intellectual property arising from projects will be vested with the project applicant.

### 3.5 Confidentiality

AI Bio and AITF are committed to protecting the confidentiality of application details. External experts acting as proposal reviewers will be required to sign a confidentiality agreement.

As provincial corporations, AI Bio and AITF are subject to the protection and disclosure provisions of the Freedom of Information and Protection of Privacy (FOIP) Act. Personal information is collected pursuant to Section 33(c) of the Freedom of Information and Protection of Privacy Act as it relates to and is necessary for this program. Any questions about the collection of this information should be directed to Joan Unger, AI Bio Director of Operations, at 780-422-5737.

## 4.0 Evaluation Criteria

Each LOI will be evaluated using the following mandatory administrative criteria. No further rating will be conducted on proposals not meeting all of these criteria:

Mandatory Administrative Criteria	Yes	No
LOI is received on time.		
LOI is complete, as per the Letter of Intent (LOI) form in the AI Bio research funding online application system: <a href="http://www.fundingconsortium.gov.ab.ca/aibio/account">www.fundingconsortium.gov.ab.ca/aibio/account</a> .		
LOI is submitted by an eligible applicant.		
Project fits within the objectives outlined in these program guidelines.		
The project utilizes CNC as outlined in these program guidelines.		

Those LOIs meeting all of the above criteria will be evaluated using the following scorecard:

No.	Desired Criteria	
1	Project Overview	/ 10
2	Objectives, Milestone and Deliverables	/ 40
3	Benefits	/ 20
4	Budget	/ 15
5	Project Team	/ 15
	Total Score (Maximum 100)	100

**For more information please contact:**

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