

# SYSTEM AND METHODS FOR FABRICATING BORON NITRIDE NANOSTRUCTURES

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## PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	12,006,210	06/11/2024	2015-024
United States Of America	Issued Patent	11,345,595	05/31/2022	2015-024
Hong Kong	Published Application	40031315 A	03/12/2021	2015-024
European Patent Office	Published Application	3718965	10/07/2020	2015-024

Additional Patents Pending

## BRIEF DESCRIPTION

A research team led by Alex Zettl has developed a variable pressure, powder/gas/liquid injection inductively coupled plasma system that is used to produce high quality boron nitride nanotubes (BNNTs) at continuous rates of 35 g/hour. For example, in this system, boron powder is introduced to a directed flow of plasma and boron nitride nanostructures are formed in a chamber. This system can produce collapsed BN nanotubes (nanoribbons) and closed shell BN capsules (nanococoons). The system is also adaptable to a large variety of feedstock materials.

## SUGGESTED USES

Scalable production of boron nitride nanomaterials that can be used in high temperature environments or harsh chemical environments, e.g., aerospace or nuclear industries.

## ADVANTAGES

Scalable production of high quality BNNTs at continuous rates of 35 g/hour

## RELATED MATERIALS

- » [Scaled Synthesis of Boron Nitride Nanotubes, Nanoribbons, and Nanococoons Using Direct Feedstock Injection into an Extended-Pressure, Inductively-Coupled Thermal Plasma - 07/08/2014](#)

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## INVENTORS

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## OTHER INFORMATION

### KEYWORDS

boron nitride nanotubes, scalable nanotube synthesis, inductively coupled plasma, hyperbaric plasma, BNNTs, BN nanotubes, BN capsules, nanococoons, boron nitride

### CATEGORIZED AS

- » **Materials & Chemicals**
- » Composites
- » Nanomaterials
- » **Nanotechnology**
- » Materials
- » NanoBio

### RELATED CASES

2015-024-0

