OAK RIDGE NATIONAL LABORATORY
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BESC - Gene impacting cellulose content and biomass formation in Populus

Disclosure Number

201303146

Technology Summary

Apart from the positive impact on biomass formation, the increased cellulose content and increase in the percentage usable fraction for biomass conversion to ethanol render the gene important to consider for lignocellulose feedstock improvement efforts. The gene reported here can be used as a candidate in marker-assisted breeding to identify individual genotypes or genetically transform plants to improve crop productivity and sustainability properties.

Inventor

KALLURI, UDAYA C
Biosciences Division

Licensing Contact

CALDWELL, JENNIFER T

UT-Battelle, LLC

Oak Ridge National Laboratory

Rm 137, Bldg 4500N6196

1 Bethel Valley Road

Oak Ridge, TN 37831

Office Phone: (865) 574-4180

E-Mail: CALDWELLJT@ORNL.GOV

Note: The technology described above is an early stage opportunity. Licensing rights to this intellectual property may be limited or unavailable. Patent applications directed towards this invention may not have been filed with any patent office.

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Novel Ligand Design for Improving the Uranium(VI) Capacity of Poly (acrylamidoxime) Fibers

Disclosure Number

201503576

Technology Summary

We report a ligand design strategy for substantially improving the uranium(VI), UO22+, capacity of poly (acrylamidoxime) fibers by decreasing their selectivity towards competing dioxovanadium(V), VO2+, and oxovanadium(IV), VO2+ ions. Our design strategy, which was derived from calculations of amidoximate-VO2+ and amidoximate-VO2+ complexes carried out high levels of theory, entails slight modification to the amidoxime monomer in the form of di-methyl substitution of amine protons. In addition to strongly wakening the interaction between amidoximate and the competing VO2+ and VO2+ ions, it inhibits the cyclization of amidoxime monomers, this is of great significance because glutarimidedioxime monomers are highly effective at binding VO2+ and VO2+ ions. A di-substituted amidoxime ligand has been synthesized and binding studies are currently underway. Additionally, a method for grafting di-substituted amidoximes onto poly(acrylamidoxime) fibers is being developed.

Inventor

BRYANTSEV, VYACHESLAV
Chemical Sciences Division

Licensing Contact

CALDWELL, JENNIFER T

UT-Battelle, LLC

Oak Ridge National Laboratory

Rm 137, Bldg 4500N6196

1 Bethel Valley Road

Oak Ridge, TN 37831

Office Phone: (865) 574-4180

E-Mail: CALDWELLJT@ORNL.GOV

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