日本―ブラジル　国際共同研究「バイオテクノロジー／バイオエネルギー」 2023 年度　年次報告書	
研究課題名（和文）	デバイスへの応用に向けた印刷電極用のリグニン由来の触媒インクの開発
研究課題名（英文）	Lignin-derived catalyst ink for printed electrodes
日本側研究代表者氏名	ジェズニチカ イザベラ イレナ RZEZNICKA　Izabela　Irena
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研究期間	2023 年 4 月 1 日～ 2026 年 3 月 31 日

1．日本側の研究実施体制

氏名	所属機関・部局・役職	役割
ジェズニチカ イザベラ RZEZNICKA Izabela	芝浦工業大学・工学部・教授	Biochar production using lignin derived from sugarcane
堀野　秀幸	東北大学・研究推進支援機構・特任准教授	Advice on biochar production methodology

2．日本側研究チームの研究目標及び計画概要

The overall research goal for Japanese team in FY2023 is to produce and characterize biochar using lignin samples extracted by team in Brazil from sugarcane bagasse and straw. The specific plans include; 1) optimization of experimental conditions for biochar production, and 2) physicochemical characterization of obtained biochar samples.

3. 日本側研究チームの実施概要

LignInkC project targets advanced conversion of sugarcane biomass into value-added materials such as catalytic inks. The inks are going to be tested in electrocatalytic reactions underlying operation of fuel cells, electrolyzers and metal-air batteries. The aim is to optimize ink properties in order to improve efficiency of electrocatalytic reactions.

In FY 2023, Brazil Team has collected sugarcane biomass (bagasse and straw) and extracted lignin from the collected materials. The amount of lignin and sugars contained in the biomass were determined for samples prepared using kraft and soda processing delignification methods. The Japanese Team used the sugarcane-derived lignin samples to produce biochars. The physicochemical properties of the produced biochars were evaluated and used to choose most promising biochars for the electrocatalytic tests.

Research results obtained in FY2023 were presented in an online international conference on Catalysis and Chemical Engineering, taking place in Boston, USA.

Various research collaborations were established with researchers from UK, Poland, Romania and Japan. It is expected that these new research collaborations will enrich output of the LignInkC project beyond its initial goals.