

## Plan Overview

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*A Data Management Plan created using DMPTool*

**DMP ID:** <https://doi.org/10.48321/D14A148760>

**Title:** NEW APPROACHES IN CATALYTIC SYSTEMS FOR ETHANOL PARTIAL DEHYDROGENATION/DEHYDRATION

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**Template:** Digital Curation Centre (português)

### Project abstract:

Despite the numerous studies published on the catalytic transformation of ethanol into different products, including partial dehydrogenation/dehydration and aldol condensation, many aspects of the process remain unexplored in the literature and may lead to new catalytic routes. This proposal presents relevant topics for the study of the catalytic transformation of bioethanol, such as new compositions of catalysts derived from hydrotalcites, the addition of perovskite in the reactor, alteration, and pressurization of the reaction atmosphere, and operation in a fluidized bed reactor.

Among the points to be developed in this proposal are changes in the composition of heterogeneous catalysts derived from materials like hydrotalcite, naturally composed of Mg and Al, where in its synthetic form, Mg will be partially substituted by two reactive transition elements, one of which will be Zn, due to its demonstrated low carbon deposition which deactivates catalysts and contributes to reactor clogging. Additionally, the addition of small amounts of perovskite-derived oxides will be investigated for their highly reactive structure in ethanol gasification to lower the minimum process temperature and consequent energy savings.

Pressurization of the reactor separately with H<sub>2</sub>, O<sub>2</sub>, and CO<sub>2</sub> will enhance reducing, oxidizing, carboxylating, and hydroformylating conditions of the chemical intermediate compounds, and their impact will be assessed on the qualitative and quantitative product profiles. Finally, a fluidized bed reactor loaded with hydrotalcite/perovskite derivatives will be tested for the first time in ethanol dehydrogenation processes, which could reduce constant clogging issues while simultaneously lowering the process temperature and overall cost.

**Start date:** 07-01-2024

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## NEW APPROACHES IN CATALYTIC SYSTEMS FOR ETHANOL PARTIAL DEHYDROGENATION/DEHYDRATION

Características dos catalisadores como composição e estrutura cristalina

Eficiência dos catalisadores como rendimentos e seletividades

Eficiência dos processos químicos

Os dados serão gerados e coletados por discentes de iniciação científica de pós-graduação (mestrado e doutorado) e lançados com frequência nesta plataforma

Os dados serão resitrados em cadernos de folhas numeradas e frequentemente vistoriados.

Em caso de conflitos de interesse ou condições de laboratório que envolvam conceitos de ética será consultado o comitê de ética local.

Apropriedade intelectual, quando cabível, será gerencia pelo escritório de pesquisa da UNESP.

Os dados serão armazenados em nuvem, seja como anexos em e-mail ou em plataforma própria como DROPBOX.

Por meio de senha eletrônica.

Basicamente, todos uma vez que se trata de um processo químico passível de patenteamento.

Mante-los em plataforma remota segura, bem como gravados em disco laser.

Os dados terão amplo acesso pelos membros da equipe.

As informações passíveis de publicação serão publicadas em dissertações, teses, congressos científicos e jornais especializados.

Sim. Em se tratando de dados tecnológicos de relevância tecnológica e passíveis de patenteamento o acesso será liberado mediante análise de caso.

O coordenador do projeto

Por meio de solicitação formal.

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## Planned Research Outputs

Dataset - "Resultados da pesquisa"

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### Planned research output details

Title	Type	Anticipated release date	Initial access level	Intended repository(ies)	Anticipated file size	License	Metadata standard(s)	May contain sensitive data?	May contain PII?
Resultados da pesquisa	Dataset	Unspecified	Restricted	None specified		None specified	None specified	No	No