Dear Editor,

# Please find enclosed our manuscript named: ”Inovative Environmentally Friendly Method of Starch Oxidation by Hydrogen peroxide” by Nataša Karić, Jelena Rusmorović, Maja Đolić, Tihomir Kovačević, Ljiljana Pecić, Željko Radovanović, Aleksandar Marinković, to be submitted to Chemical Industry for consideration of publication. We certify that the submission is original work and is not under review at any other journal.

# This work is focused on optimization procedure and technology of a simple and efficient laboratory and industrial processes for preparation of oxidized starch using hydrogen peroxide as environmentally friendly oxidant. Main intention of process optimization of starch oxidation was maximization of the oxidation of hydroxyl to carboxyl groups. The use of hydrogen peroxide has become widespread due to its low price, high oxidation potential and beneficial environment-friendly qualities like safety of use and production of non-toxic wastes. The reaction mechanisms between hydrogen peroxide and starch are very complex and depend on the reaction conditions (temperature, concentration, *etc.*), the type of oxidant and catalyst type and presence of modifier/plasticizer. The wheat starch was oxidized using hydrogen peroxide with or without plasticizers (RA, DIPT, ESO, ELO and ESFO) and metal catalyst (FeSO4·7H2O, CuSO4·5H2O, copper(II) citrate and copper(II) ricinoleate) at different temperatures (20 and 80 °C). The structural and morphological properties were tested by FTIR, TGA and FE-SEM techniques. The viscosity of samples at laboratory and industry level was determined using capillary viscometer methods and Brookfield viscometer, respectively.

After selection of the optimal parameters and fulfilment of customer quality request (extent of oxidation) two synthesized catalyst: copper(II) citrate and copper(II) ricinoleate was used. Among these two catalyst better activity was obtained for copper(II) citrate at lower temperature (20-40 oC) which is beneficial processing parameter satisfying lower energy consumption. Except of this, possibility to achieve necessary extent of starch oxidation (in accordance to market demand) copper(II) citrate in a combination with RA and ESO plasticizer was optimal choice to be used at industrial level of production.

We believe that the results obtained in this study could be of interest to the readers of [Chemical](https://link.springer.com/journal/13738) Industry, because they bring environmentally friendly process for obtaining oxidized starch with low generation of hazardous by-products and waste water which can be used as an additive in the paper manufacturing and products for construction industry.

Sincerely Yours,

Nataša Karić,

The Faculty of Technology and Metallurgy, University of Belgrade,

Karnegijeva 4, 11120 Belgrade, Serbia,

Phone: +381 11 3303750

Email: natasa.karic312@gmail.com