

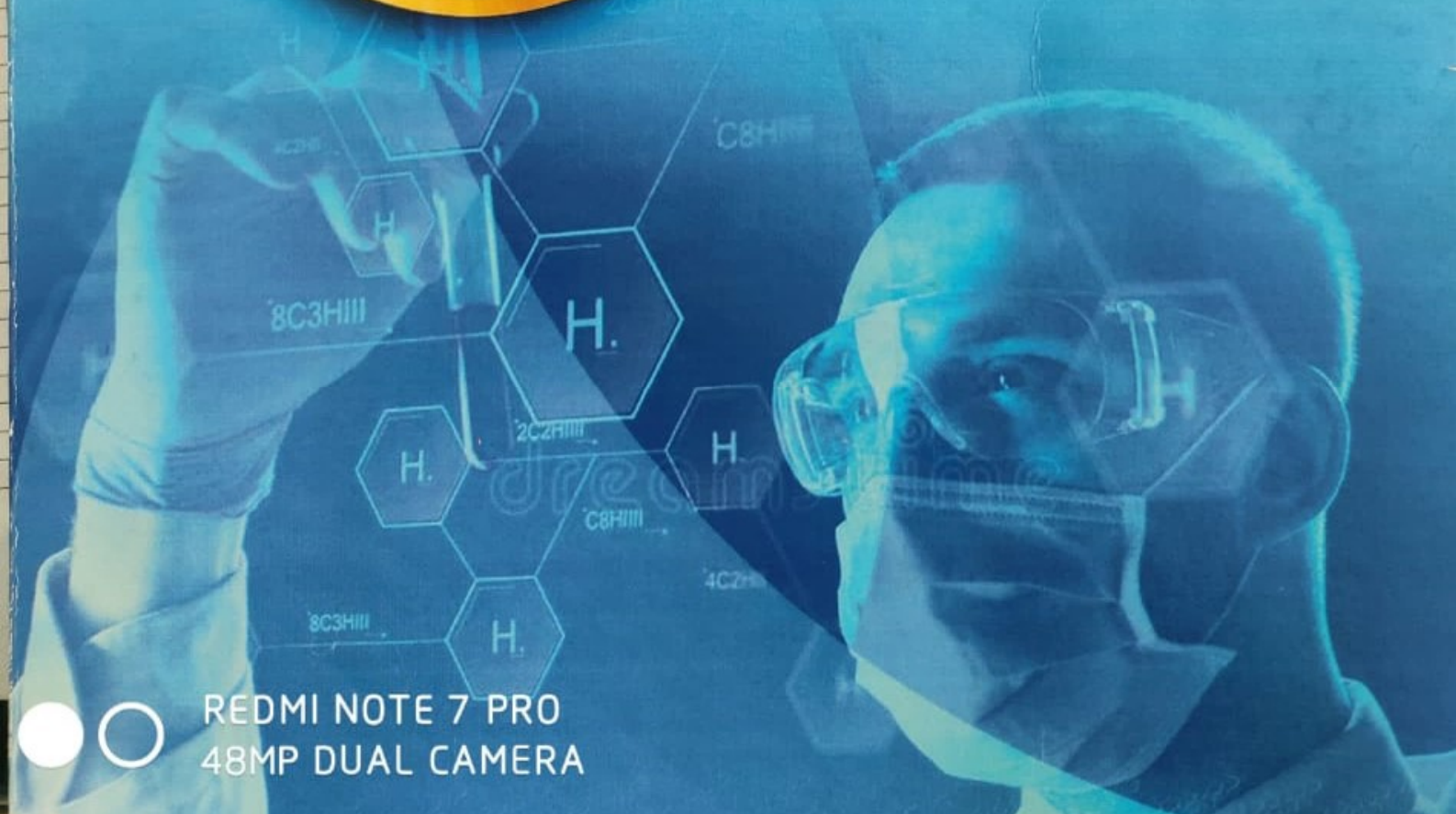


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## Use of Heterogeneous Catalysts in Carbohydrate Chemistry: a mini review

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### Abstract

In recent years, the use of heterogeneous catalysts has received considerable interest in various disciplines including organic synthesis. Several heterogeneous catalysts have been developed and used in carbohydrate chemistry to protect hydroxyl and amine group of sugar motifs. These catalysts have been used as an efficient and safe alternative promoter for acetalation, acetylation of sugar glycosides and Fischer type glycosylation reaction using stoichiometric reagents without work-up.

### Introduction

The use of stoichiometric reagents and catalytic promoters to minimize waste has become a demanding challenge for synthetic chemists when atom economy and green chemistry are considered.<sup>1</sup> Various attempts have been made to achieve this goal by using efficient promoters and so minimizing work-ups.<sup>2</sup> Heterogeneous catalysts play an important role in chemical synthesis. They are preferred due to their robustness and lower operational cost, in particular through easier recovery/separation from the products allowing chemical processes to be streamlined. Many industrial heterogeneous catalysts consist of active sites distributed on an amorphous surface such as silica, on nanoparticle surfaces, or in zeolites. The advantages of these heterogeneous catalysts include stability, insensitivity towards air and moisture, ease of handling, lack of corrosion and other environmental hazards, and ease of recovery and regeneration.

During the last few years a number of new and novel methodologies for protection of carbohydrates and alcohols have been developed by using of heterogeneous catalyst. Here we summarized some interesting recent approaches towards synthesis of protected carbohydrate derivatives using different heterogeneous catalysts.

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