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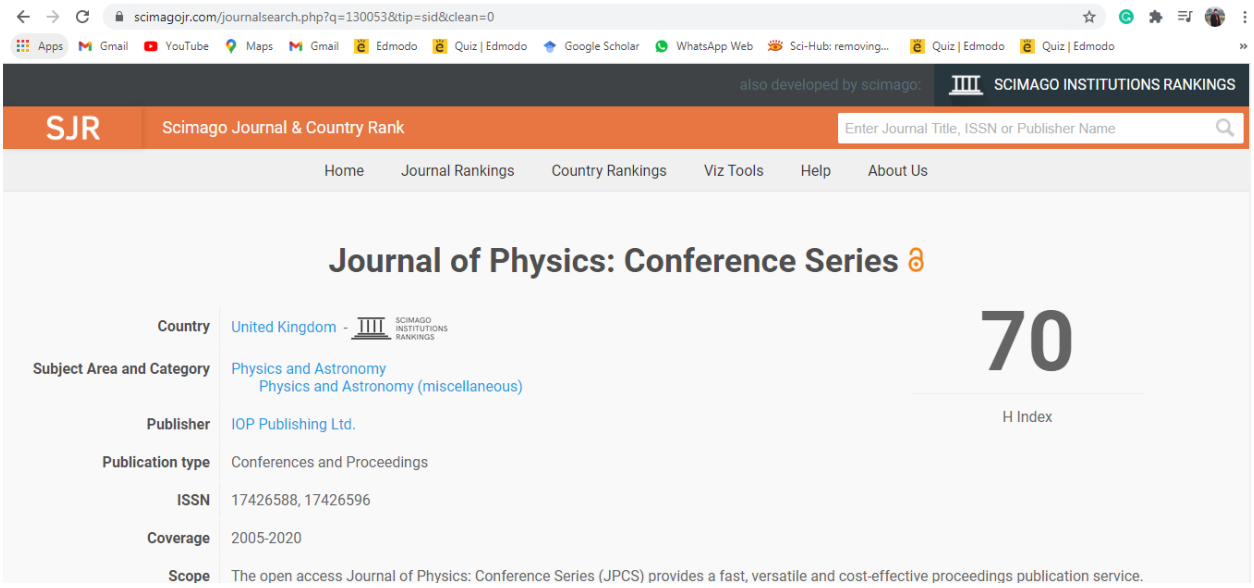

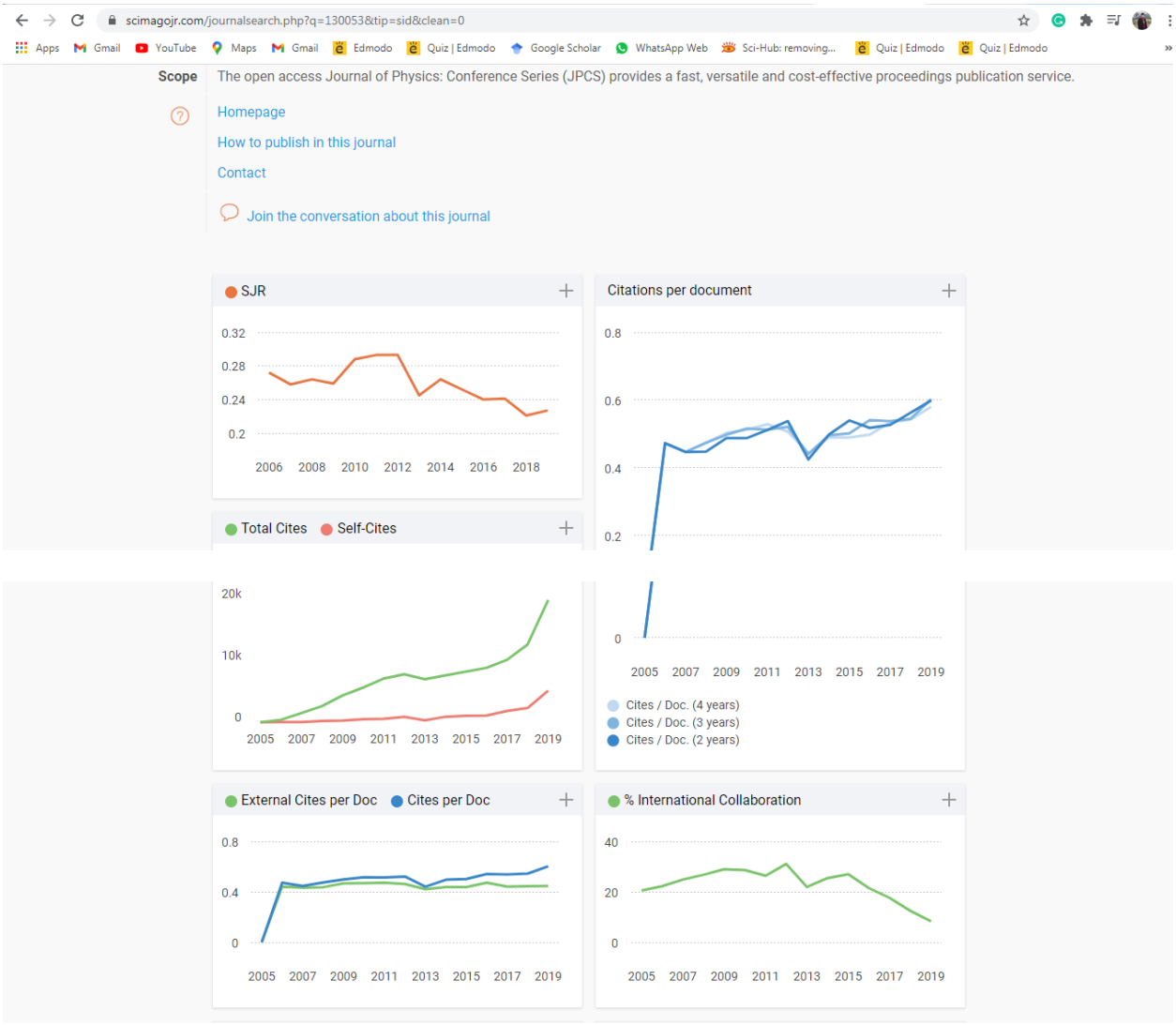

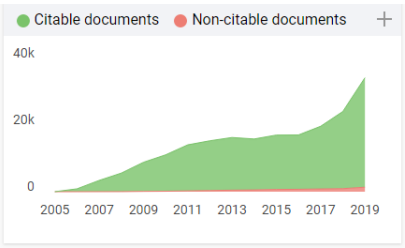
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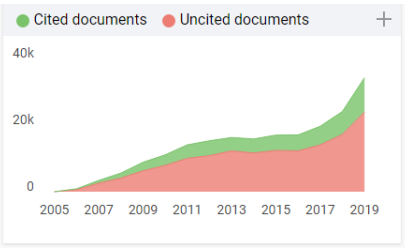
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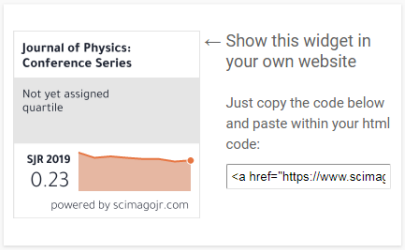
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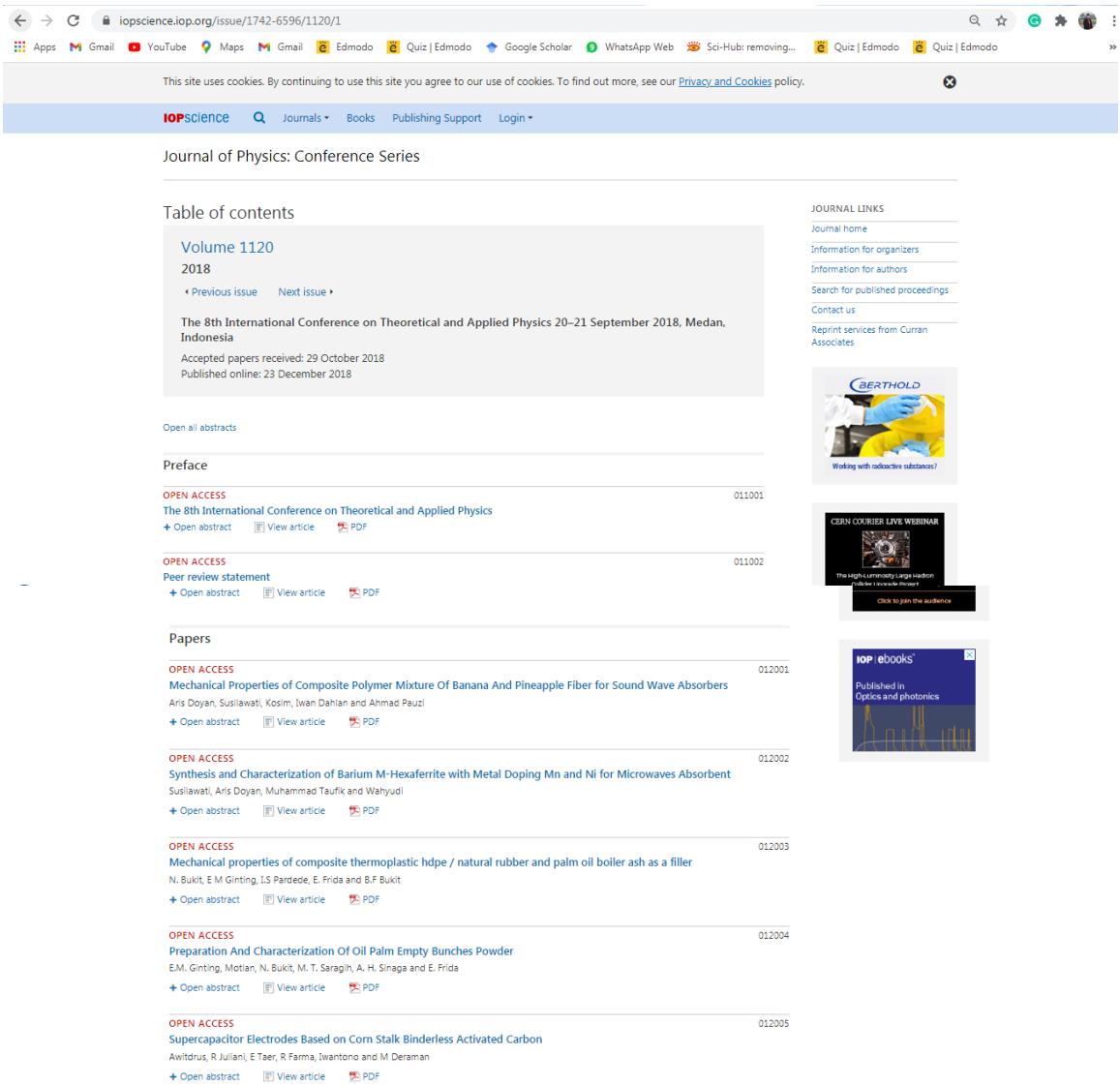

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Table of contents

Volume 1120

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Previous issue Next issue

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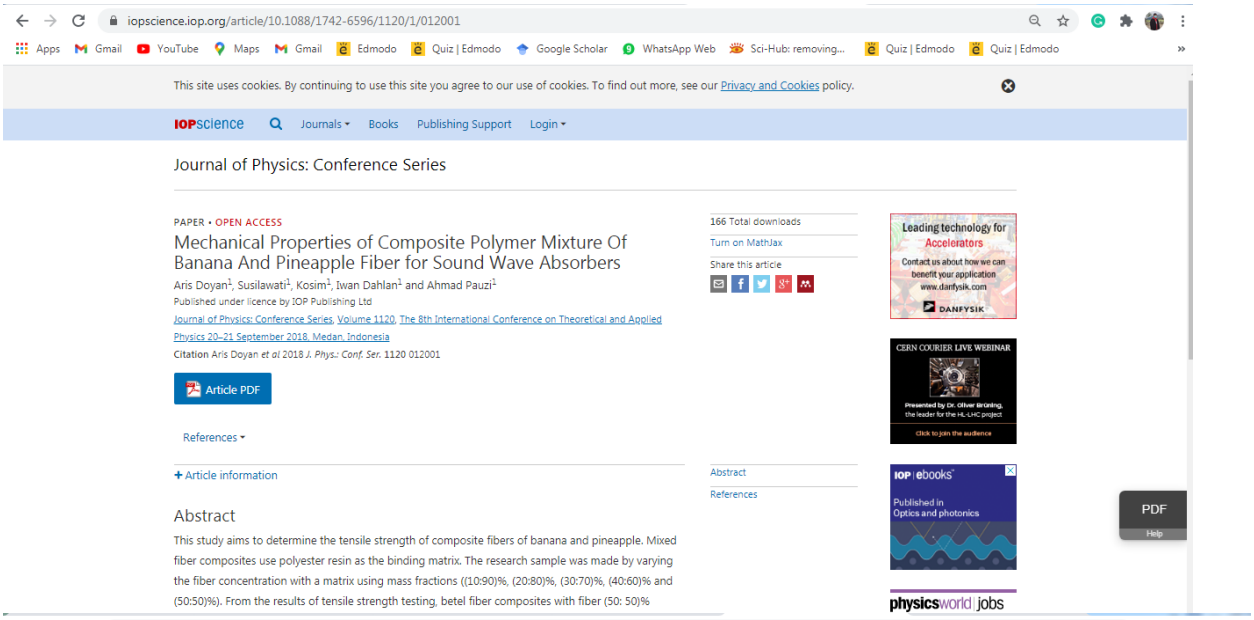
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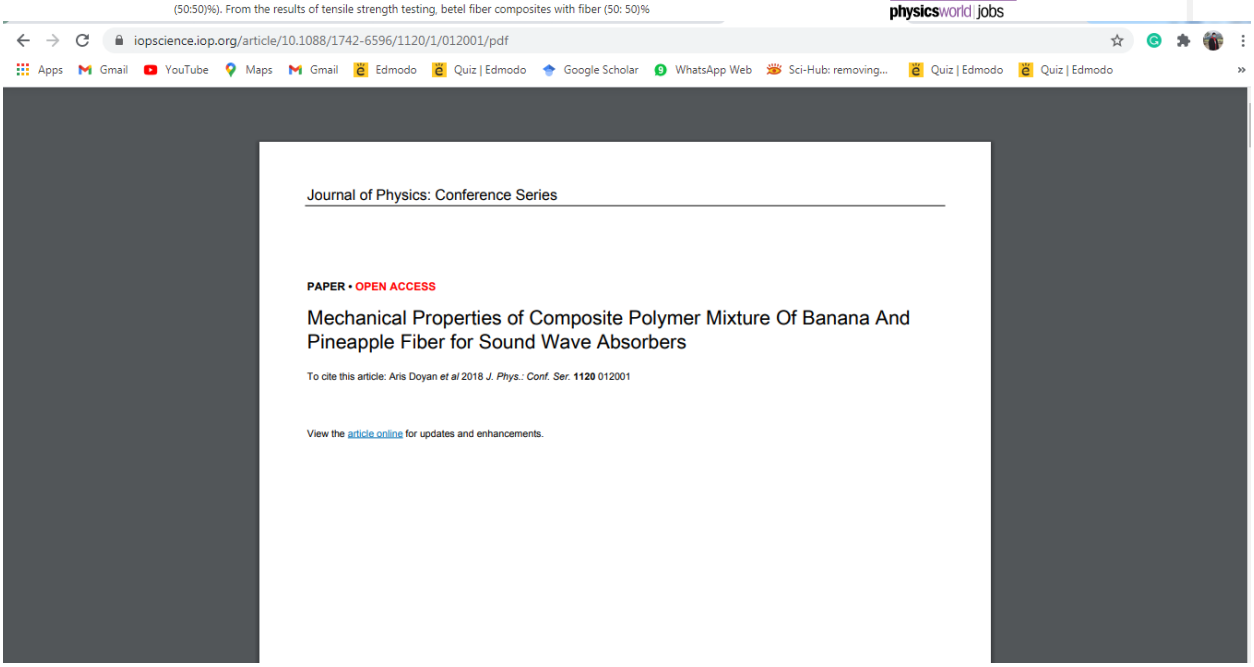
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Mechanical Properties of Composite Polymer Mixture Of Banana And Pineapple Fiber for Sound Wave Absorbers

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Abstract. This study aims to determine the tensile strength of composite fibers of banana and pineapple. Mixed fiber composites use polyester resin as the binding matrix. The research sample was made by varying the fiber concentration with a matrix using mass fractions ((10:90)%, (20:80)%, (30:70)%, (40:60)% and (50:50)%). From the results of tensile strength testing, betel fiber composites with fiber (50: 50)% concentration is the best fiber because it has a maximum stress of 15.422 Mpa, elasticity modulus of 1350.5 MPa, elongation of 0.0402 mm and break point value of 0, 0048. This tensile strength value is greater than the standard SNI 03-2105 which is a minimum of 8 MPa and higher than previous researchers who use natural fiber.

Keywords: composite of banana and pineapple fiber

1. Introduction

The progress of science and technology has resulted in pollution that disrupts human comfort and health. One of the most common pollution is noise or noise pollution, especially for buildings or buildings that are close to the highway. To overcome this, various types of sound absorbing materials were developed, to create buildings or buildings with certain acoustic characteristics so as to create comfort and be able to reduce noise caused.

The materials commonly used as sound absorbers are fibers, both natural fibers and synthesis. When compared with synthetic fibers, natural fibers are more profitable to develop. This is because natural fibers are made from materials that are easily obtainable, are biodegradable or can be broken down again if they are damaged or cannot be used anymore and the manufacturing process is not complicated and economical. The development of natural fiber composites not only includes the development of natural fibers in the form of fiber composites and composite structures as described previously. Natural fiber research also exists in the form of particle composites. The results of this study indicate that the optimum composition is achieved by adding 6% (volume) of empty oil palm bunches fiber [1].

Natural fiber which has great potential to be developed as a natural fiber material is banana fiber. The results of the study of banana fiber composites are able to absorb sound with a sound absorption coefficient of 0.84 at a fiber volume fraction of 50%, this shows that banana stem fiber composites are able to absorb sound well for low frequency and medium frequency, in accordance with ISO 11654: 1997 standards (E) where the sound absorption coefficient of acoustic material is at least 0.15. [2].

In addition to the ability to absorb sound, an important variable that needs to be considered in the manufacture of composites is the mechanical properties of the specimen tensile test. Preliminary research conducted by several researchers, among others, coconut fiber composites with PVAc matrix produced maximum tensile strength in composition (70:30)% by 2 MPa [3], water hyacinth fiber composites produced a maximum tensile strength of 1.7 MPa [4] , banana stem fiber composites with epoxy resin matrix with maximum tensile strength in composition (50:50)% of 10.93 Mpa [5].

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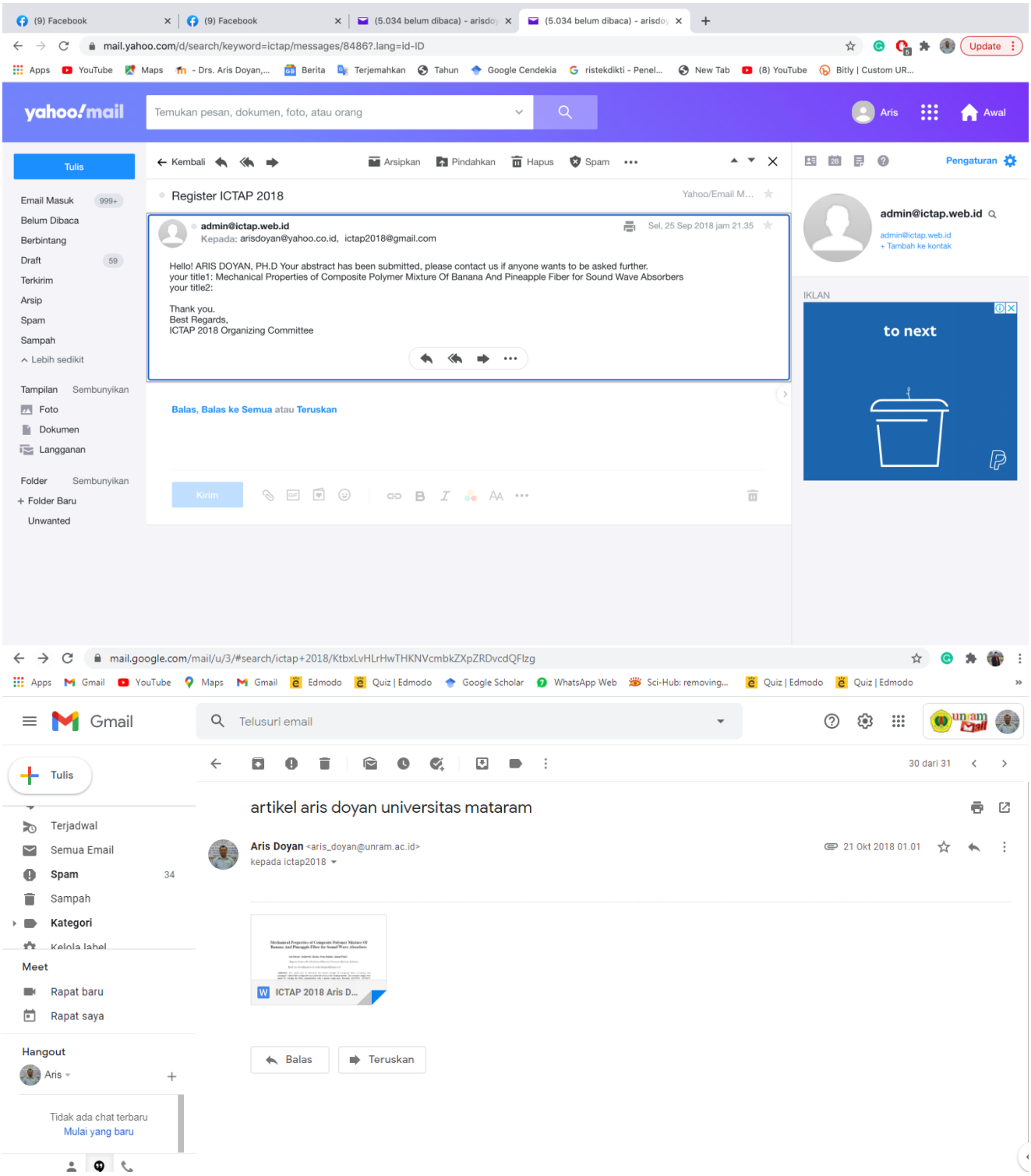

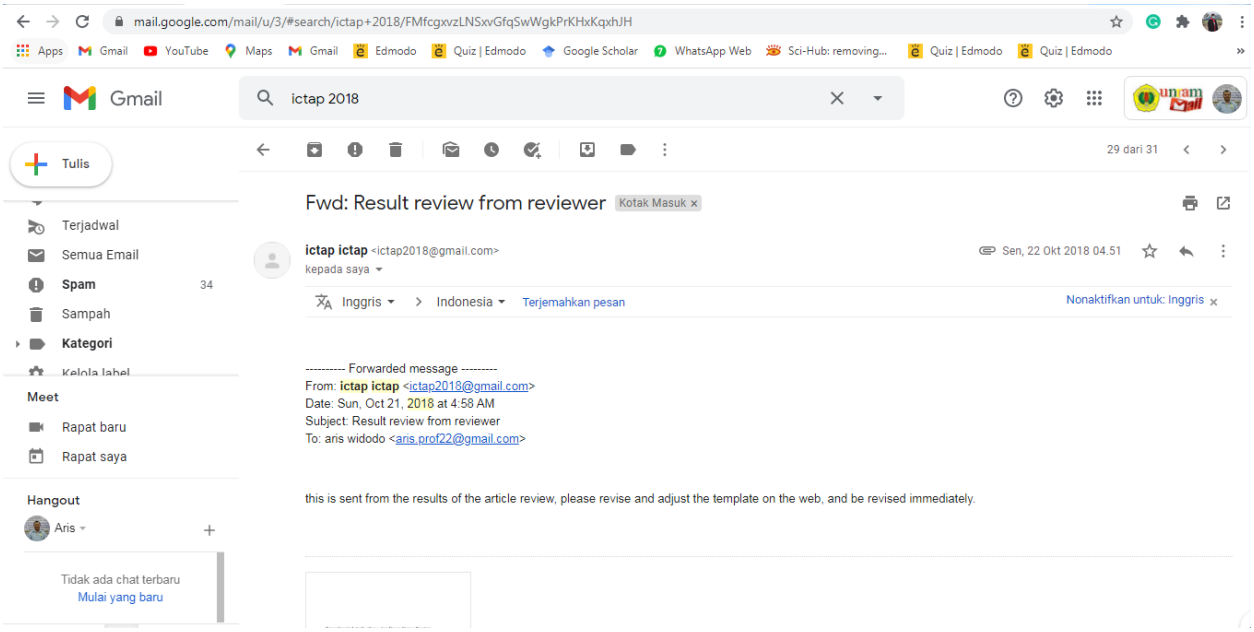
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