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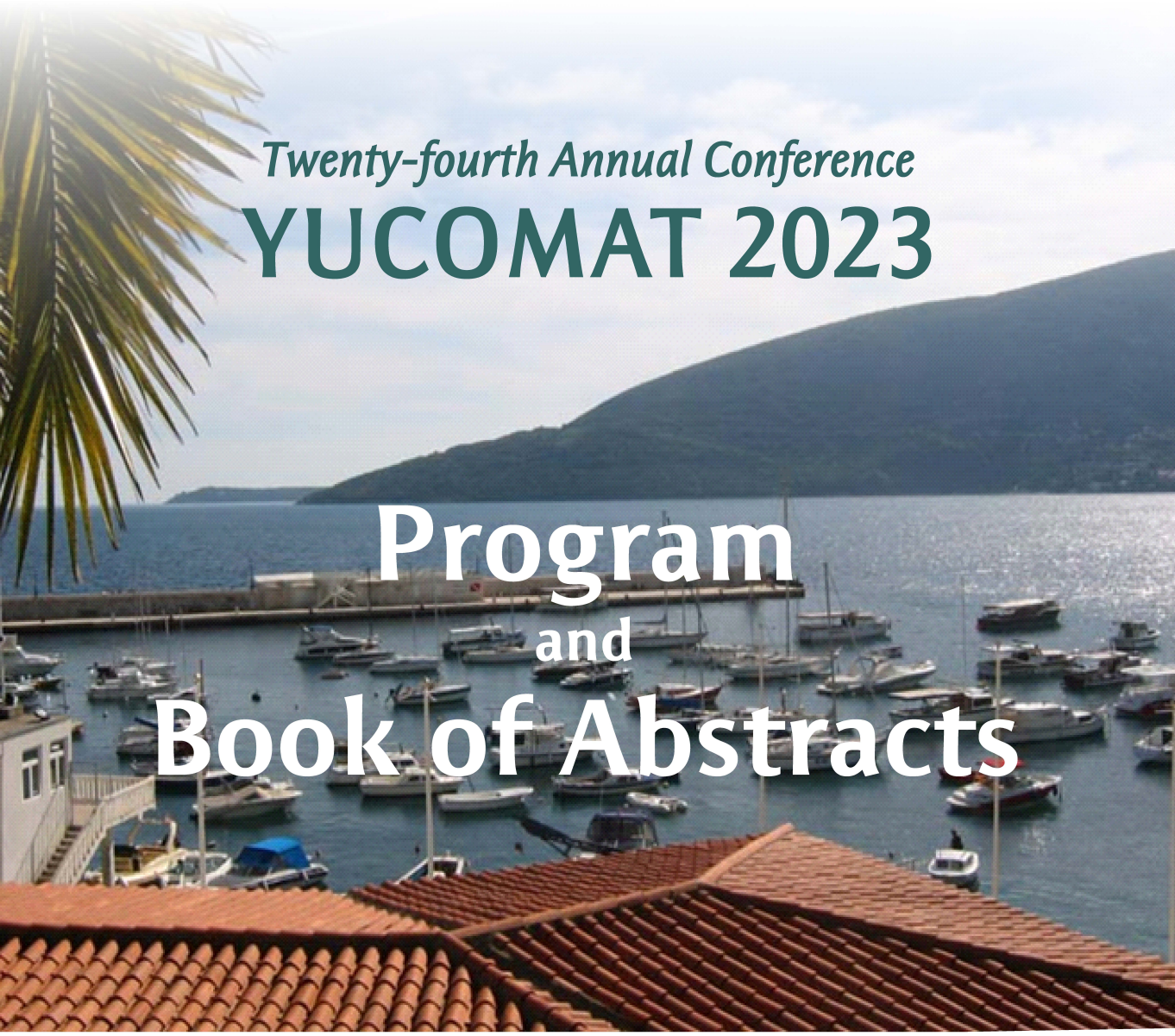

Twenty-fourth Annual Conference

YUCOMAT 2023

Program and Book of Abstracts

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FEDERATION OF EUROPEAN MATERIALS SOCIETIES

Materials Research Society of Serbia

24 conference

SERBIA MRS

YUCOMAT 2023

Herceg Novi, Montenegro :: September 4-8, 2023

TWENTY-FOURTH ANNUAL CONFERENCE

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Hunguest Hotel Sun Resort, Herceg Novi, Montenegro
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Federation of European Material Societies

CIP – Каталогизација у публикацији
Народна библиотека Србије, Београд

66.017/.018(048)
621.762.5)048)

DRUŠTVO za istraživanje materijala Srbije (Beograd). Godišnja konferencija (24 ; 2023 ; Herceg Novi)
Programme ; and The Book of Abstracts / Twenty-fourth Annual Conference YUCOMAT 2023, Herceg Novi, Montenegro, September 4 - 8, 2023 ; organized by Materials Research Society of Serbia ; [editor Dragan P. Uskoković]. – Belgrade : Materials Research Society of Serbia, 2023 (Herceg Novi : Biro Konto). - XLVII, 183 str. : ilustr. ; 24 cm

Tiraž 220. – Bibliografija uz pojedine apstrakte. - Registar.

ISBN 978-86-919111-8-8

a) Наука о материјалима -- Апстракти b) Технички материјали -- Апстракти
v) Синтеровање -- Апстракти

COBISS.SR-ID 122486537

Title: THE TWENTY-FOURTH ANNUAL CONFERENCE **YUCOMAT 2023**
Program and Book of Abstracts

Publisher: Materials Research Society of Serbia
Knez Mihailova 35/IV, P. O. Box 433, 11000 Belgrade, Serbia
Phone: +381 11 2185-437; http://www.mrs-serbia.org.rs

Editor: Prof. Dr. Dragan P. Uskoković

Conference Secretary: Jasmina R. Jevtić

Technical editor: Dr. Ivana Dinić

Typesetting and prepress: Dr. Aleksandar Dekanski

Covers: Front cover photo: property of MRS Serbia
Back cover photo: J. Erskine-Kelli, Attribution-ShareAlike 2.0 Generic (CC BY-SA 2.0)

ISBN 978-86-919111-8-8

MRSS is member of the
Federation of European Materials Societies

Printed in: **Biro Konto,** Sutorina bb, Igalo – Herceg Novi, Montenegro
Phones: +382-31-670123, 670025, E-mail: bkonto@t-com.me

Circulation: 220 copies. The end of printing: August 2023

P.S.82.

Modification of MoS_2/GO composites with ball milling and thermal treatment for catalytic application

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Hydrogen production can be outlined as an important aspect of the modern economy. In order to be more clean and renewable, green hydrogen is most desirable, where expensive catalysts for water electrolysis are usually used. As alternative, transition metal dichalcogenides represent potentially good material, with room for further improvement. Molybdenum disulfide is a stable material with a reasonable amount of it available. The properties of the material can be easily tuned in order to increase its charge transport and create more active sites. The incorporation of defects and additives can be beneficial for the catalytic activity of MoS_2. Graphene oxide (GO) is carbon nanomaterial, with a large surface area and when reduced, it could be used as a conductive additive. Furthermore, ball milling is a known low-cost, simple and scalable method to introduce defects in the structure. Therefore, combining these two approaches should result in a material with enhanced catalytic activity for hydrogen evolution reaction. The molybdenum disulfide was prepared by easy one-step hydrothermal synthesis. The graphene oxide was first obtained by modified Hummers' method and after that reduced by thermal treatment at 200 °C. Thus prepared constituents are combined in different mass ratios and composites were obtained by milling with a high-energy ball mill. The various milling parameters were optimized. The prepared composites were analyzed as catalysts for hydrogen evolution reaction in an acidic solution.