

Rachel Ruoxi Ma, Ph.D.

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EDUCATION

Western Michigan University, Kalamazoo MI. Ph.D. in Paper and Printing Science;

Dissertation: *Screen Printed Moisture Sensor on Barrier Coated SBS Board: The Characterizations of the Hemicellulose-Based Biofilms and Their Applications for Smart Packaging*

Xi'an University of Technology, Xi'an, China, MS. in Paper and Printing Engineering

Qingdao University of Science and Technology, Qingdao, China. B.S. Printing Science

RELEVANT TEACHING EXPERIENCE

GRC 211 Materials for Graphic Communication Applications (2018-present)

GRC 328 Offset Printing Methods (2018-present)

GRC 402 Digital Printing and Emerging Technologies in GrC (Summer 2020 -2021)

GRC 462 Senior Project (2020-present)

GRC 463 Senior Project – Applied Practices (2020-present)

SELECTED PEER REVIEWED PUBLICATIONS

1. Ruoxi Ma, Dina Vees, Xiaoying Rong, "**Market and Technology Study on Digital Printing for Medical Device Packaging Printing**" The Technical Association of Graphic Arts Proceedings 2023, pgs. 148-165
2. Ruoxi Ma, Pekarovicova, A, "**Screen Printed Moisture Sensor and Its Application on Smart Packaging**" The Technical Association of Graphic Arts Proceedings 2021, pgs. 191-203
3. Ruoxi Ma, Lawler B., "**Color Gamut Extension on Four-Color Sheet-fed Offset Press Using Ink Fountain Divider Methodology**" The Technical Association of Graphic Arts Proceedings 2020, pgs. 38-44
4. Altay B.N.; Ruoxi Ma; Fleming, P.D., "**Surface Free Energy Estimation: A New Methodology for Solid Surfaces**" Advanced Material Interfaces (impact factor 6.389), First published: 24 January 2020, 1901570.
<https://doi.org/10.1002/admi.201901570>
5. Ruoxi Ma, Pekarovicova, A., Fleming, P.D., "**Biopolymer Films from Glucomannan: The effects of Citric Acid Crosslinking on Barrier Properties**" Journal of Print and Media Research Technology, Research 7(2018)1, 19-25

SELECTED CONFERENCE PRESENTATIONS AND INVITED TALKS

1. "Market and Technology Study on Digital Printing for Medical Device Packaging Printing" Presented at the TAGA Annual Technical Conference, Oklahoma City, OK, March 2023
2. "Progression of Digital Print in Healthcare Packaging". Presented at the PACKout conference, Austin, TX, May 2023
3. "Printed electronics and additive manufacturing methods". Invited talk to Guatemala Faculty Commons, virtual, April 6, 2022
4. "Screen Printed Moisture Sensor and Its Application on Smart Packaging". Presented at the TAGA Annual Technical Conference, Virtual, June. 10, 2021
5. "Color Gamut Extension on a four-color Sheet-fed Offset Press Using Ink Fountain Divider Method". Presented at the TAGA Annual Technical Conference, Virtual, Apr. 10, 2020
Ruoxi Ma, "Printing Technologies for Electronics Applications: 2D and 3D Printed Electronics". Presented at the IDTechEx Show, Santa Clara, CA. Nov. 19-21, 2019
6. Ruoxi Ma, "Printing Technologies for Electronics Applications: Flexography, Gravure, Inkjet and Screen". Presented at the IDTechEx Show, Santa Clara, CA. Nov. 14-15, 2018

GRANTS

- Teaching and Research on Innovative Packaging Solutions for Medical Applications at Hochschule München University of Applied Sciences, funded by German Academic Exchange Service (DAAD)
 - **Visiting Researcher, ~ €6,000, Spring 2025**
- Study on carbon footprint estimation of materials used in various mailing solutions, Sponsored Project awarded by Quad Graphics Co.,
 - **Co-PI, ~\$17,416, Winter 2025**
- From Dairy to Design (DtoD): Empowering EIM and GrC students through interdisciplinary and community engaged co-curricular project, proposal submitted
 - **o Co-Pi, ~ \$13,540, Summer 2024**
- Print and Graphics Scholarship Foundation (PGSF) grant for research on gravure roll-to-roll technologies.
 - **PI, \$2,500, Spring 2024**
- The Use of AI-created selfies in a public service announcement (PSA) campaign targeting college students: the impact of self-reference on issue relevance and engagement *funded by the Research, Scholarly, and Creative Activities grant program (R-EDGE) at Cal Poly.*

- **Co-Pi, ~\$11,800, Summer 2023**
- Study on Digital Printing for Medical Device Packaging, Sponsored Project awarded by Oliver Healthcare Packaging Co.,
 - **Co-PI, ~ \$33,480, Winter 2022**
- GEF (gravure education foundation) under PGSF (Print and Graphic Scholarship Foundation).
 - **Proposed and secured a donation of a gravure proofer press. ~ \$8,975, Fall 2021**

INTERNATIONAL TEACHING AND RESERACH

- Visiting Professor – Hochschule München University of Applied Sciences, Munich, Germany (Spring 2025)
 - Taught graduate-level course in “Packaging Materials for Medical Applications” and undergraduate course in “Trends in Graphic Communication”.
 - Led student research on sustainable and intelligent packaging technologies in medical sectors across EU and North America.
 - Conducted research titled: *“Packaging Solutions for Medical Applications: A Market and Technology Review of the EU and North America”* – Abstract under preparation for submission to a peer-reviewed conference or journal.

PATENT

- Ma, R. and Cao, C. *A Method for Formulating Silver-Doped Lanthanum Titanate Photochromic Ink*. Chinese Patent [CN 103804986 \(A\)](#). Issued May 21, 2014

REPRESENTATIVE EXPERT WITNESS ENGAGEMENTS

- **MGI Digital Technology S.A. v. Duplo U.S.A. Corp.**, Case No. 8:22-cv-00979-DOC-KES (C.D. Cal.)
 - Retained by counsel for the plaintiff as a technical expert in a federal patent infringement case involving digital printing and finishing technologies.
 - Provided written expert opinions, supported pre-trial discovery, and participated in deposition proceedings.
 - Case involved detailed analysis of print system architecture and patent interpretation under U.S. patent law.
- **Fujifilm Corporation v. Eastman Kodak Company**, Case No. 2:24-cv-04017 (D.N.J.)
 - Retained by counsel for the defendant in a publicly filed federal patent infringement action concerning processless lithographic printing plate technologies.

- **Pratt Retail Specialties, LLC v. Proampac LLC, Case No. 1:24-cv-01073-UNA**
 - Retained by counsel for the plaintiff in a publicly filed federal patent infringement action concerning food packaging technologies.

PHD COMMITTEE

Duo He (external member, Western Michigan University)

Dissertation: The Fractionation of Woody Biomass with Bifunctional Aryl Sulfonic Acids at Mild Conditions, 2022

MENTORED STUDENTS' PROJECTS AND AWARDS

- Mentored students [research journal](#) won the grand prize in the [TAGA student chapter of 2023 and 2024 competitions](#).
- Mentored students research journal project won the [Digital Enhancement Award](#) in the TAGA student chapter competition of 2021-2022.
- Mentored students research journal project - "California Calling" won the [Grand Prize Award \(The Helmut Kipphan Cup\)](#) in the TAGA Student Chapter Competition of 2020-2021

