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COMATEC
Institut de Conception
mécanique et
Technologies des
matériaux

AddiPole EPFL

**Technopôle
Sainte-Croix**
Micro Manufacturing Center

Invitation à la journée d'automne 2024 de la chambre d'experts du Groupement professionnel Additive Manufacturing (GPAM)

Date: 10. Octobre 2024

Lieu: Institut COMATEC, HEIG-VD, Yverdon

Chers membres de Swiss Engineering STV, chers intéressés,

Le groupe spécialisé Additive Manufacturing (GPAM) a le plaisir de vous inviter à sa réunion d'automne le 10 octobre 2024. Vous pourrez assister à des conférences passionnantes en anglais (E) sur des technologies innovantes et visiter l'institut COMATEC et son laboratoire de fabrication avancée de structures composites. Profitez de cette occasion pour échanger des idées avec vos collègues et élargir votre réseau !

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Programme:

- 14h00 Accueil des participants
- 14h20 **Présentation de l'institut COMATEC**
Jean-Pascal Reymondin (COMATEC / HEIG-VD), Randoald Müller (COMATEC / HEIG-VD)
- 14h40 **A hybrid Selective Laser Sintering based process for the additive manufacturing of architected composites (E)**
E. Guenier (COMATEC / HEIG-VD), A. Schorderet (COMATEC / HEIG-VD), R.E. Logé (LMTM / EPFL)
- 15h00 **Robotic additive manufacturing for high performance fibre composite parts (E)**
Joël Cugnoni (COMATEC / HEIG-VD)
- 15h20 **Visite de l'institut COMATEC** et du laboratoire en fabrication avancée de structures composites
- 16h40 **Présentation des synergies : AddiPole, le Technopôle de Ste-Croix et le groupement professionnel additive manufacturing GPAM de Swiss Engineering (E)**
Sylvain Hugon (COMATEC-ADDIPOLE / HEIG-VD)
- 17h00 **Print patterning using nanoparticle inks - exemples d'activités du Laboratoire Applications des NanoSciences (E)**
Silvia Schintke (Laboratory of Applied NanoSciences, COMATEC-LANS / HEIG-VD)
- 17h20 **Apéro et réseautage (F/G/E)**

Nous nous réjouissons de vous accueillir pour cette après-midi enrichissante et interactive !

Groupement Professionnel Additive Manufacturing (GPAM) Swiss Engineering

Inscription jusqu'au 1er octobre 2024 via www.swissengineering.ch
ou am@myswissengineering.ch

SWISS ENGINEERING
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Coûts Gratuit pour les membres du groupe spécialisé et de Swiss Engineering en général, CHF 50 pour les non-membres

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Résumé des présentations

A hybrid Selective Laser Sintering based process for the additive manufacturing of architected composites

E. Guenier (COMATEC / HEIG-VD), A. Schorderet (COMATEC / HEIG-VD),
R.E. Logé (LMTM / EPFL)

The PhD thesis aimed at proving the feasibility of a new hybrid 3D printing method, combining two existing technologies, Selective Laser Melting (SLM) and Laminated Object Manufacturing (LOM), in order to print architected composites made of a metal and a polymer. The motivation for using a hybrid process lies in the challenges inherent to SLM : high thermal stresses, and recycling issues.

A custom made hybrid printing prototype has been developed at HEIG-VD. A Printed Circuit Board (PCB) was chosen as a case study, combining a conducting copper foil and a Polyamide 12 (PA12) dielectric. As copper is known to have low adhesion properties with polymers, an in-situ laser texturing method was investigated to improve adhesion strength. The proposed solution is two orders of magnitude faster compared to literature, while adhesion strength is improved by a factor 4.

Robotic additive manufacturing for high performance fibre composite parts

Joël Cugnoni, COMATEC / HEIG-VD

Due to their intrinsic high performance per weight, composite materials are ideally suited for high performance lightweight parts but manufacturing of continuous fiber composite part is complex, time consuming and limited by strong constraints. Greene Tweed and COMATEC/HEIG-VD have developed recently a custom 7-DOF robotic manufacturing process based on laser assisted continuous fiber narrow tape deposition to produce hybrid continuous – discontinuous carbon fiber- PEEK parts that combine both complex geometry and high structural performance. In this talk we will present these developments as well as other on-going research activities towards additive manufacturing of continuous fiber composite parts and recyclable composite tooling.

Print patterning using nanoparticle inks

S. Schintke, Laboratory of Applied NanoSciences (COMATEC-LANS) / HEIG-VD

Print patterning finds interest for decorative printing and printed electronics applications, printable magnetic or electromagnetic encoding systems, or for the development of advanced printable authentication methods. Using nanoparticle inks, complex print patterns and structures can be obtained.

In this talk we present examples of 2D and 3D print structuring processes. We have built a versatile platform for the development, investigation and adjustment of tailored print patterning processes using local magnetic fields. The obtained structured patterns are compared with finite element modelling of the magnetic fields.