



Der Vorsitzende des Promotionsausschusses

EINLADUNG

Hiermit lade ich ein zum öffentlichen Promotionskolloquium von

Frau M.Sc. Maria Amélia Martins

Funktionswerkstoffe

(Prof. Dr.-Ing. Frank Mücklich)

am

Donnerstag, 27. August 2026, 9:00 Uhr s.t.

per Videokonferenz: Link für MS Teams: <http://bit.ly/3Tz9J4J>

Raum für die Prüfung: Gebäude D3.3, Seminarraum 2.15

Thema der Dissertation:

Tailoring self-propagating reactions in Ni/Al multilayer foils via ultrashort-pulsed laser micromachining

Reactive multilayer foils can generate intense, highly localized heat through self-propagating reactions, making them a promising heat source for advanced joining. This dissertation investigates how femtosecond laser micromachining can be used to tailor the behavior of Ni/Al reactive foils. The results show that these sensitive materials can be precisely structured without premature ignition and minimal thermal damage. Laser-induced surface modifications were shown to influence reaction propagation, while deliberately designed geometries enabled the reaction front to be controlled and guided. The findings provide new insights into the relationship between laser processing, microstructure and reaction dynamics, establishing a basis for more precisely controlled heat delivery in future joining applications.

Saarbrücken, 13. August 2026

Prof. Dr.-Ing. Georg Frey