



دعوة لحضور ورشة عمل

ضمن برنامج التعاون البحثي بين جامعة طرابلس بالإشتراك مع قسم الهندسة المدنية/ كلية الهندسة وجامعة التقنية بميونخ الألمانية والمدعوم من قبل المنظمة الألمانية للتبادل الأكاديمي DAAD. برعاية جامعة طرابلس والهيئة الليبية للبحث العلمي تسر كلية الهندسة دعوتكم لحضور ورشة عمل يقدمها الأستاذ الدكتور يوهان بلانك

(استاذ الكيمياء و مواد الإنشاء بجامعة ميونخ) بعنوان :

” آثار تغير المناخ على صناعة البناء العالمية ”

“Effect of Climate Change on Global Construction Industry”

”صناعة اسمنت صديق للبيئة”

“Making Cement Greener”

وذلك يوم الاحد الموافق 27-مارس-2022م على تمام الساعة 9:00 صباحا بمسرح كلية الهندسة.

شاكرين لكم حضوركم وتعاونكم معنا وتفضلوا بقبول فائق الإحترام والتقدير

د. صالح علي الصالح
عميد كلية الهندسة



برنامج زيارة الأستاذ الدكتور يوهان بلانك :

اليوم	التاريخ	الوقت	الفعالية		
الأحد	2022.03.27	8:30 - 9:00	الاستقبال		
		9:00-9:10	كلمات الترحيب		
		9:10-9:20	عرض فيديو عن جامعة طرابلس		
		9:20- 10:00	محاضرة آثار تغير المناخ على صناعة البناء العالمية		
		10:00-10:15	حلقة نقاش		
		10:15-11:00	محاضرة صناعة أسمنت صديق للبيئة		
		11:00-11:15	حلقة نقاش		
		11:15-12:00	استراحة- بوفيه		

Curriculum Vitae

Prof. Dr. Johann Peter Plank

Chair Construction Chemistry, Department Chemistry, Technical University of Munich, Germany.



Prof. Plank-- works in the field of inorganic (cement chemistry, silicates, aluminates, phosphate, CaSO₄ phases) and organic binding agents (latex dispersions, epoxy resins, polyurethane). He also studies construction chemical admixtures (polycondensate resins, polycarboxylate, cellulose ethers, siloxanes, biopolymers), colloid chemistry, interface and surface phenomena and nanochemistry (nanomaterials and composite materials). Prof. Dr. Johann Plank has taught at TUM Asia for over 10 years, ever since the Master of Science in Industrial Chemistry programme was offered in Singapore. Like many other TUM professors, he has many years of experience working in the industry and he teaches what he knows best, based on real life examples of what he has experienced first hand. Professor Plank specialises in construction chemicals, such as cement, and he highlights the importance of such fields to his students in various ways. After studying chemistry in Regensburg, he did his doctorate in 1980 under Prof. Herrmann. He initially worked as a biochemistry research group leader at SKW in Trostberg from 1980-86. In 1997, he became head of research in construction and oil field polymers. This work took him to the USA, Singapore and Japan. In 2001, he became a full professor at TUM. Visiting professorships took him to a number of institutes, including Wuhan University of Technology, the National University of Singapore and the Tokyo Institute of Technology. Prof. Plank is chairman of the board of trustees of the Leonhard Lorenz Foundation and co-editor of the journal Cement & Concrete Research.

<http://www.bauchemie.ch.tum.de/master-framework/index.php?lang=en>

Some Pictures during the visit in 2019 students and Professor from University of Tripoli, Civil Engineering Department due to German Academic Exchange Service (DAAD) Cooperation Program between university of Tripoli and Technical University of Munich (TUM), Germany.





Workshop

University of Tripoli, Faculty of Engineering and Civil Engineering Department sponsor by Libyan Authority for Scientific Research, will hold a workshop entitled " **Effects of Climate Change on Global Construction Industry**" at 27&29-03-2022 which will be presented by Prof. Dr. Johann Plank - Professor of chemistry in construction materials at the Technical University in Munich, Germany. Notice that Prof. Dr. Johann Plank will visit us due to **German Academic Exchange Service (DAAD)** Cooperation Program between University of Tripoli and Technical University of Munich (TUM), Germany.

We ponder seeing you at the seminar ...

with all kindness

Program of Prof. Dr. Johann Plank's visit to University of Tripoli, Faculty of Engineering

Day	Date	Time	Activity
Sunday	2022.03.27	8:30- 9:00 AM	Reception
		9:00- 9:10 AM	Welcoming Speech
		9:10- 9:20 AM	Video about University of Tripoli
		9:20- 10:00 AM	"Effects of Climate Change on Global Construction Industry" presented by <i>Prof. Dr. Johann Plank</i>
		10:00- 10:15 AM	Questions and discussion
		10:15 - 11:00 AM	" Making Cement Greener - Low Carbon Composite Cements Containing Calcined Clays " presented by <i>Prof. Dr. Johann Plank</i>
		11:10 - 11:15 AM	Questions and discussion
		11:15-12:00 AM	Buffet

Abstracts for the two presentation by Prof. Dr. Johann Plank

1- Effects of Climate Change on Global Construction Industry

The average temperature on our planet has started to rise which is believed to originate from anthropogenic greenhouse gas emissions, mainly but not exclusively from CO₂ gas. Moreover, studies have revealed that building materials and construction including heating & cooling of buildings contribute no less than 40 % to global greenhouse gas emission which presents the highest share of all emission sectors. In view of this situation the global construction industry is faced with the challenge to completely rethink its technology. Potential improvements include to substitute clinker-rich Portland cement with low clinker composite cements based on calcined clays (e.g. LC3 or LC2) or slag. Those cements exhibit a CO₂ footprint of as low as 150 Kg/ton only, but they require special chemical admixtures to achieve high flow properties. Furthermore, buildings need to become more energy efficient ("zero energy buildings") by applying effective thermal insulation systems including aerogels, and the use of photovoltaic or geothermal self-sufficient energy supply. Additionally, plants and "green" facades should be incorporated into buildings, and cities shall have extensive green belts to take up CO₂. The lecture concludes that global warming will have a very significant impact on the way we build in the future, and that the construction industry will need to undergo a fundamental change if it wants to overcome its negative effect on the climate.

2-Making Cement Greener - Low Carbon Composite Cements Containing Calcined Clays

In this lecture, at first the sources of high CO₂ emission from current Portland cement production will be presented and potential solutions will be addressed. Currently, the most widely accepted approach for greener cements includes to substitute the clinker with calcined clays as pozzolanic material (SCM). The chemistry of different calcined clays and their behavior with respect to workability and strength development will be discussed next. A major challenge for those cements is the availability of highly effective superplasticizers. It is shown that only HPEG PCEs and zwitterionic polycarboxylates can disperse them effectively. Moreover, the slow early strength development of calcined common clays can be overcome by admixing C-S-H-PCE nanoparticle suspension, an extremely effective accelerator and seeding material which promptly initiates the silicate hydration. The presentation concludes that chemical admixtures play a most critical role for the success and widespread use of those green composite cements.