

<b>Job title</b>	<b>PhD Thesis Organometallic Catalysis</b>
<b>Ref</b>	2018-03-UBsmarTZ
<b>Job type (PhD, Post-doc, Engineer)</b>	PhD
<b>Contract duration (months)</b>	36 months
<b>Qualifications (Master degree, PhD...)</b>	Master degree
<b>Job hours (full time/ part time)</b>	35h – full time
<b>Employer</b>	UBFC – Université de Franche-Comté
<b>Host Laboratory</b>	Institut de Chimie Moléculaire de l'Université de Bourgogne (ICMUB) Organometallics, Catalysis and Stereochimie ; Pr Hierso group
<b>URL Host Laboratory</b>	<a href="http://www.icmub.fr/">http://www.icmub.fr/</a>
<b>Address Host Laboratory</b>	Institut de Chimie Moléculaire - UMR CNRS 6302 9 avenue Alain Savary – BP 47870 – 21078 DIJON CEDEX
<b>Job description</b>	In the last few years s-tetrazines have been the object of considerable interest in various research fields of primary importance. These include the development of functional materials for energy and health applications. For instance, tetrazines are bioorthogonal “Click Chemistry” reagents or useful fluorophores with original optoelectronic features. Yet, the synthetic preparation of highly functionalized s-tetrazine remains extremely limited. It mainly relies on the initial Pinner synthesis of poorly-functionalized tetrazine showing serious synthetic limitations. This entire project aims at delivering the next generation of synthetic methods towards modular and convenient construction of highly functionalized tetrazines and useful derivatives. By an organometallic strategy our team recently completed the selective polyhalogenation in <i>ortho</i> -position of aryltetrazine, difficult to achieve by conventional organic synthesis, in only few minutes paving

	<p>an innovative path to the application to radioactive fluorination <math>^{18}\text{F}</math> (see <i>Angew. Chem. Int. Ed.</i> <b>2016</b>, <i>55</i>, 5555; PCT Int. Appl. <b>2017</b>, WO 2017093263 A1 20170608; <i>ACS Catal.</i> <b>2017</b>, <i>7</i>, 8493). To extend this work we will be explored here metal-catalysed reactions based on modern sustainable chemistry and green processes, by mainly using selective C–H bond activation and direct C–H bond functionalization at s-tetrazines. We will investigate the methods and reaction scope of usable transition metals with electrophilic and nucleophilic reagents to integrate with tetrazine-core useful reactive functional groups through C–C and C–X bond formation (X = O, N, P, B, etc.). In-depth mechanistic study will be achieved by experimental and DFT studies, in order to solve the issue of rate limiting step at metal, compatibility with tetrazine core or reagents in the catalytic process.</p>
<b>Supervisor(s)</b>	<p>Pr. HIERSO, Jean-Cyrille (jean-cyrille.hierso@u-bourgogne.fr) Dr. ROGER, Julien (julien.roger@u-bourgogne.fr)</p>
<b>Candidate profile</b>	<p>The candidate should hold a master degree or engineer school diploma in molecular chemistry with honours (mention). He/she must have a background and practice of organic and/or late transition metal chemistry (organometallics) including characterization and purification methods (NMR, chromatography). Interest or experience in metal catalysis and mechanism elucidation is necessary. A good knowledge of English and/or French is highly recommended.</p>
<b>Keywords</b>	<p>Tetrazine, selectivity, transition metals, applications</p>
<b>Application deadline</b>	<p>07/07/2018</p>
<b>Application</b>	<p><b>PhD Position</b></p> <p>Please send the following documents (all in one PDF file) by e-mail to job-application@ubfc.fr:</p> <ol style="list-style-type: none"> <li>1) For EU candidates: Copy of your national ID card or of your passport page where your photo is printed. For non-EU candidates: Copy of your passport page where your photo is printed.</li> <li>2) Curriculum Vitae (1 page).</li> <li>3) Letter of motivation relatively to the position (1 page).</li> <li>4) Copy of your Master degree and/or Engineer degree if already available.</li> <li>5) Copy of your final marks and ranks.</li> <li>6) Coordinates of reference persons (maximum 3, at least your master thesis supervisor): Title, Name, organization, e-mail.</li> </ol> <p>If you have questions regarding the application, please contact the supervisors.</p>