

Synlett 2014 vol.25 N9, pages 1302-1306

---

## Direct guanylation of amino groups by cyanamide in water: Catalytic generation and activation of unsubstituted carbodiimide by scandium(III) triflate

Tsubokura K., Iwata T., Taichi M., Kurbangalieva A., Fukase K., Nakao Y., Tanaka K.  
*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

---

### Abstract

Guanylation proceeded efficiently upon treatment of the various amines with cyanamide in the presence of catalytic amounts of scandium(III) triflate under mild conditions. The method did not require the guanylation reagents to be preactivated, and the reaction proceeded efficiently in water. The method, therefore, has practical utility for substrates that dissolve only in aqueous solutions, for example, peptides or pharmacologically important compounds. © Georg Thieme Verlag Stuttgart New York.

<http://dx.doi.org/10.1055/s-0033-1341080>

---

### Keywords

activated carbodiimide, cyanamide, guanylation