

## **Evolution of star-forming galaxies in the Hercules cluster: new observational clues of the mass-metallicity relation**

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### **Abstract**

The star formation history, gas-content and the mass interchange with the environment (infall of metal-poor gas and/or outflow of enriched material) are the fundamental variables controlling the chemical evolution of a galaxy. Observational hints which constrain the galaxy evolution scenarios in dense environments have lately started to be investigated (Mouhcine et al. 2007, Ellison et al. 2009, Cooper et al. 2008). In this work we study the relation between metallicity and environment for a sample of star-forming galaxies in the Hercules cluster. Spatially resolved spectroscopy has been obtained for 28 galaxies selected from our deep H $\alpha$  survey of the Hercules cluster. We apply spectral synthesis models to all our emission-line spectra using the evolutionary code STARLIGHT and we obtain fundamental parameters of the underlying stellar component, as the mean metallicity and age. By the emission-line spectra corrected from the stellar population continuum we derive gas chemical abundances using empirical strong-line calibrations. We calculate galaxies' physical properties as masses and total luminosities using SDSS broadband photometry. All the information obtained has provided us with new observable imprints of the cluster environment effect on the chemical evolution of galaxies and the mass-metallicity relation.