

# Fulvio Ratto

## Personal Data:

Place and Date of Birth: Genova, April 28<sup>th</sup>, 1978  
Citizenship: Italian  
Address: Via Galante 44, I-33078 San Vito al T. (PN), Italy  
Marital Status: Single  
Military Service: Not performed

## Higher Education:

High School degree attained at “Liceo Scientifico Statale E. Majorana” in San Vito al T. (PN) in 1997 with top score **60/60**.

Laurea Degree in Physics (equivalent to MSc), with specialization in Solid State Physics, at the University of Trieste, Italy, in 2002 with top score **110/110 cum laude**.

Experimental Thesis in Condensed Matter Physics: “*Phase transitions in thin Lead films on Germanium*”.

Thesis Supervisor: Prof. Alberto Morgante, Thesis Co-Supervisor: Dott. Luca Floreano.

## Study Awards and Prizes:

- **Fellowship for Undergraduate Students**, named: “*Metallic thin films on semiconductors*”, granted by INFN, from March 2002 to November 2002, at the National TASC INFN laboratories in Trieste, Italy.  
Supervisor: Prof. Alberto Morgante.
- **Post-graduate contract**, since December 2002 to April 2003 at the National TASC INFN laboratories in Trieste, Italy.  
Supervisor: Prof. Alberto Morgante.
- **Post-graduate contract**, since April 2003 to August 2003 at the INRS laboratories in Varennes, Quebec.  
Supervisor: Prof. Federico Rosei.
- **Post-graduate Fellowship**, since July 2003 to August 2003 at the Yokohama City University laboratories in Yokohama, Japan (offered by ITC and JISTEC).  
Supervisor: Prof. Yukichi Shigeta.

- **Government of Canada Award Holder**, since September 2003 to August 2004, to develop a PhD program at INRS laboratories in Varennes, Quebec.  
Supervisor: Prof. Federico Rosei.
- **Graduate Student Fellowship** for attending the TNT 2004 conference in Segovia (Spain) in August 2004.
- **Government of Canada Award Holder**, since September 2004 to August 2005, to pursue a PhD program at INRS laboratories in Varennes, Quebec.  
Supervisor: Prof. Federico Rosei.

### **Experimental techniques:**

Good experience in ultra high vacuum technology; scanning tunneling microscopy and spectroscopy; elastic and inelastic helium atom scattering; low energy electron diffraction; X-Ray photoemission electron microscopy; low energy electron microscopy; molecular beam epitaxy.

Basic knowledge about atomic force microscopy; X-Ray diffraction; photoelectron spectroscopy and diffraction; reflection high energy electron diffraction; scanning electron microscopy; pulsed laser deposition.

### **Foreign Languages:**

Very good written and spoken English.

Very good written and spoken French.

Fair written and spoken German.

Basic spoken Japanese.

### **Computer Skills:**

Basic knowledge of DOS and Windows OS and relevant applications for statistical analysis of experimental data, mainly with *Igor Pro 4.05A*, and word processing with major Win suites and also *LaTeX* for Win and Mac.

### **Memberships:**

Materials Research Society (MRS) member.

American Physical Society (APS) member.

### **Professional Interests:**

Basic experimental research in fields with highly applicative potentialities, such as crystal growth, in particular heteroepitaxial growth of metals or semiconductors on semiconducting substrates.

Characterization of surfaces through microscopic, spectroscopic, diffractive techniques, or their possible combinations.

### **Additional Personal Interests and Activities:**

Cultural and linguistic improvement trips.

Vice President of the student association CÉISME at INRS in Varennes, Québec.

### **Publications:**

- 1) **F. Ratto**, F. Rosei, ‘Comment on: Formation of two dimension Ge cluster superlattice on Si(111)-(7X7) surface [Surf. Sci. 506 (2002) L255]’, *Surf. Sci.* **530**, 221 (2003).
- 2) **F. Ratto**, F. Rosei, A. Locatelli, S. Cherifi, S. Fontana, S. Heun, P.D. Szkutnik, A. Sgarlata, M. De Crescenzi, N. Motta, ‘Composition of Ge(Si) islands in the growth of Ge on Si(111)’, *Appl. Phys. Lett.* **84**, 4526 (2004).
- 3) L. Grill, D. Cvetko, L. Petaccia, **F. Ratto**, S. Modesti ‘Layer-by-layer growth of lead on Ge(1 1 1) at low temperatures’, *Surf. Sci.* **562**, 7 (2004).
- 4) **F. Ratto**, F. Rosei, A. Locatelli, S. Cherifi, S. Fontana, S. Heun, P.D. Szkutnik, A. Sgarlata, M. De Crescenzi, N. Motta, ‘Composition of Ge(Si) islands in the growth of Ge on Si(111) by X-Ray Spectro-Microscopy’, in press: *J. Appl. Phys.*.

### **Conferences, workshops, summer schools:**

#### **Invited contributions:**

- 1) ‘Semiconductor heteroepitaxy: a viable approach for carrier confinement’, invited at the Losinj summer school, island of Losinj, Croatia, 09/2004.
- 2) ‘Critical issues in semiconductor *quantum dots*: intermixing’, invited at the Losinj summer school, island of Losinj, Croatia, 09/2004.
- 3) ‘Properties of Ge(Si) nanostructures: alloying, stability and positioning’, invited at the APS March Meeting, Los Angeles, CA (USA) 03/2005.

#### **Oral contributions:**

- 1) **F. Ratto**, F. Rosei, A. Locatelli, S. Cherifi, S. Fontana, S. Heun, P.D. Szkutnik, A. Sgarlata, M. De Crescenzi, N. Motta, ‘Ge/Si concentration in Ge/Si(111) islands’, APS March Meeting, Montréal, QC (Canada) 03/2004.
- 2) **F. Ratto**, F. Rosei, A. Locatelli, S. Cherifi, S. Fontana, S. Heun, P.D. Szkutnik, A. Sgarlata, M. De Crescenzi, N. Motta, ‘Ge/Si concentration in Ge/Si(111) islands’, 2004 MRS Spring Meeting, San Francisco, CA (USA) 04/2004.

- 3) **F. Ratto**, F. Rosei, A. Locatelli, S. Cherifi, S. Fontana, S. Heun, P.D. Szkutnik, A. Sgarlata, M. De Crescenzi, N. Motta, 'Ge/Si concentration in Ge/Si(111) islands', MBE 2004, Edinburgh, Great Britain 08/2004.

**Poster contributions:**

- 1) **F. Ratto**, G. Bavdek, D. Cvetko, L. Floreano, A. Morgante, 'The low temperature growth mode of Pb on Ge(111)', Nanomaterials Crossroads, Montreal, QC (Canada) 10/2003.
- 2) **F. Ratto**, G. Bavdek, D. Cvetko, L. Floreano, A. Morgante, 'Pb/Ge(001) phase transitions', 2003 MRS Fall Meeting, Boston, MA (USA) 12/2003.
- 3) **F. Ratto**, G. Bavdek, D. Cvetko, L. Floreano, A. Morgante, 'The low temperature growth mode of Pb on Ge(111)', 2003 MRS Fall Meeting, Boston, MA (USA) 12/2003.
- 4) **F. Ratto**, F. Rosei, A. Locatelli, S. Cherifi, S. Fontana, S. Heun, P.D. Szkutnik, A. Sgarlata, M. De Crescenzi, N. Motta, 'Ge/Si concentration in Ge/Si(111) islands measured by XPEEM', Pre APS March Meeting, Montréal, QC (Canada) 03/2004.
- 5) **F. Ratto**, F. Rosei, A. Locatelli, S. Cherifi, S. Fontana, S. Heun, P.D. Szkutnik, A. Sgarlata, M. De Crescenzi, N. Motta, 'Ge/Si concentration in Ge/Si(111) islands measured by XPEEM', TNT 2004, Segovia, Spain 09/2004.
- 6) **F. Ratto**, F. Rosei, A. Locatelli, S. Cherifi, S. Fontana, S. Heun, P.D. Szkutnik, A. Sgarlata, M. De Crescenzi, N. Motta, 'Ge/Si concentration in Ge/Si(111) islands measured by XPEEM', Nanomaterials Crossroads, Boucherville, QC (Canada) 10/2004.

**Seminars:**

- 1) 'The low temperature growth mode of Pb on Ge(111)', at INRS University of Quebec, Varennes, QC (Canada), 05/2003.
- 2) 'The low temperature growth mode of Pb on Ge(111)', at Yokohama City University, Yokohama, Japan, 07/2003.